SONY

ROLLABOUT PACKAGE

PCS-3000
PCS-3000P

ROLLABOUT PROCESSOR

PCS-P300/P300P

CAMERA UNIT

PCS-C300/C300P

MICROPHONE

PCS-A300

REMOTE COMMANDER

PCS-R500

1BRI BOARD

PCS-I300

CABINET

PCS-F500

KEY COMMANDER

PCS-R510

T.120 CARD

PCS-UC300

V.35 BOARD

PCS-I500

SERVICE MANUAL

1st Edition

TriniCom-3000

MANUAL STRUCTURE

Purpose of This Manual

This manual is the Service Manual for the rollabout processor PCS-P300/P300P of the TV Conference System PCS-3000/3000P.

This manual describes the information (parts replacement and electrical alignment) and covers information on parts.

Contents

The following is a summary of all the sections of this manual.

SECTION 1. OPERATING INSTRUCTION

Describes in SECTION 1. OPERATING INSTRUCTION of the PCS-3000/3000P System Service Manual.

SECTION 2. SERVICE OVERVIEW

Describes the external panel removal procedures during servicing, layouts of the main parts and boards, board removal procedures, notes and so on.

SECTION 3. CIRCUIT DESCRIPTIONS AND TROUBLESHOOTING

Illustrates the block diagrams which show each board function and signal flow, and describes outlines of the circuits.

Describes the information related to when the system experiences a problem.

SECTION 4. ELECTRICAL ALIGNMENT

Describes the electrical adjustments of each board.

SECTION 5. DIAGNOSTICS GUIDE

Describes the Diagnostics Software Manual for the processor unit PCS-P300/P300P of the TV Conference System PCS-3000/3000P series. This manual describes the information on the diagnostics software "TriniCom Simple Debugger" and "TriniCom Boot/Loader" to be used during service of PCS-P300/P300P.

*A service staff can start up and control the software from a terminal personal computer which is connected to the AUX. CONTROL terminal of the processor.

The version number of the diagnostics software appears when the power of the processor is turned on.

SECTION 6. SEMICONDUCTOR PIN ASSIGNMENTS

Shows the external dimensions of the semiconductors used, and describes outlines of the function blocks and pin names of the ICs.

SECTION 7. ELECTRICAL PARTS LIST

Describes the electrical service parts of the unit.

SECTION 8. EXPLODED VIEWS

Describes the mechanical service parts of the unit.

SECTION 9. SCHEMATIC DIAGRAMS AND BOARD LAYOUTS

Shows the schematic diagrams and board layouts of all the circuit boards.

Related Manuals

Besides this "Service Manual", the following manuals are available:

- Operation Manual (supplied with PCS-3000/3000P system)
  This manual is necessary for the application and operation of this unit. SECTION 1. OPERATING INSTRUCTION of the PCS-3000/3000P System Service Manual describes the contents.

- System Service Manual
  PCS-3000/3000P
  Parts number: 9-977-692-11
  The system service manual describes the operations, connections and service information concerning board replacements of the PCS-3000/3000P system for the service personnel (quick recovery).

TABLE OF CONTENTS

SECTION 1 OPERATING INSTRUCTION

Describes in SECTION 1. OPERATING INSTRUCTION of the PCS-3000/3000P System Service Manual.

SECTION 2 SERVICE OVERVIEW

SECTION 3 OUTLINE OF OPERATION AND TROUBLESHOOTING

SECTION 4 ELECTRICAL ALIGNMENT

SECTION 5 DIAGNOSTICS GUIDE

SECTION 6 SEMICONDUCTOR PIN ASSIGNMENTS

SECTION 7 ELECTRICAL PARTS LIST

SECTION 8 EXPRODED VIEWS

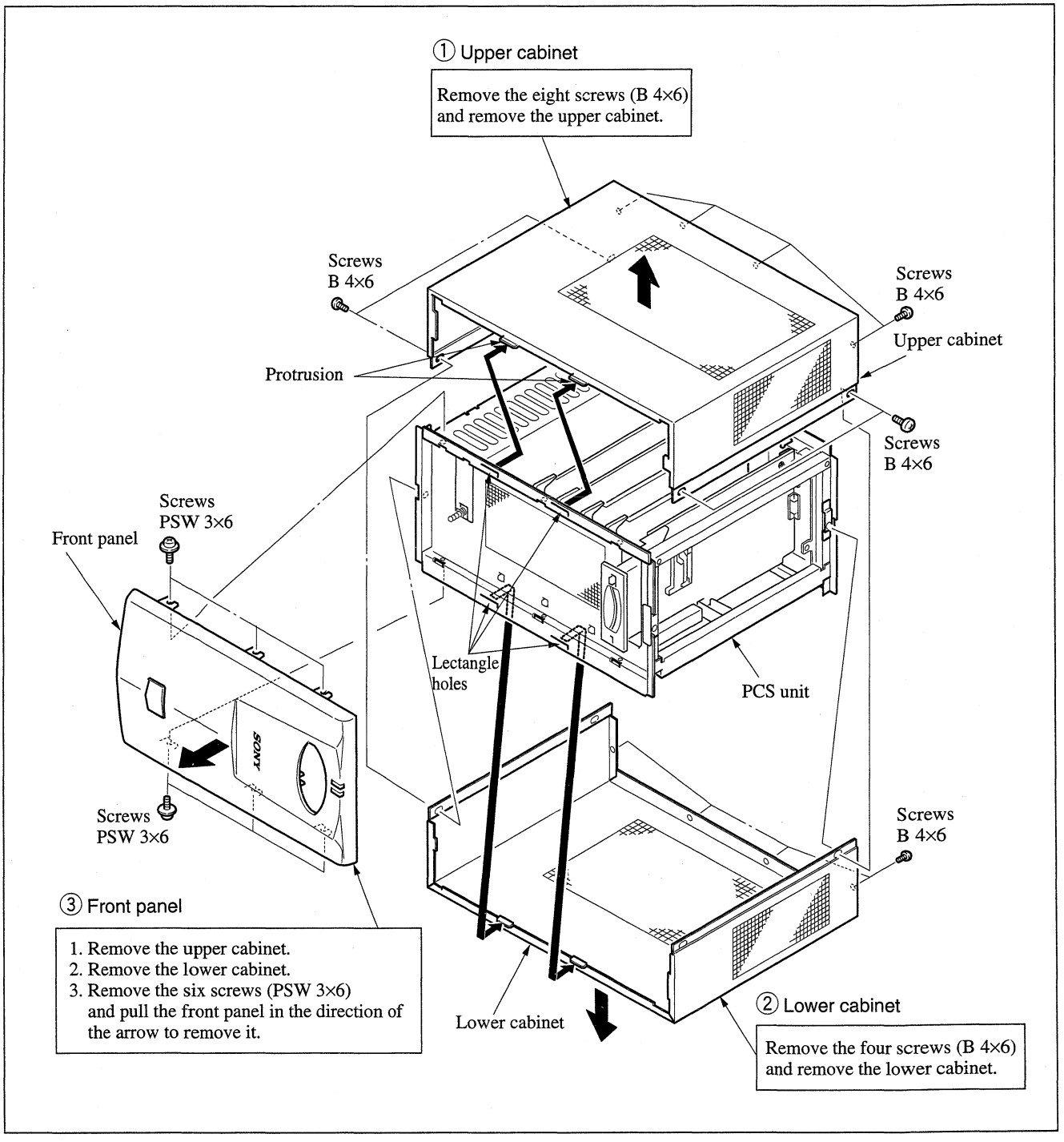
SECTION 9 SCHEMATIC DIAGRAMS AND BOARD LAYOUTS

SECTION 1
OPERATING INSTRUCTION

Describes in SECTION 1. OPERATING INSTRUCTION of the PCS-3000/3000P System Service Manual.

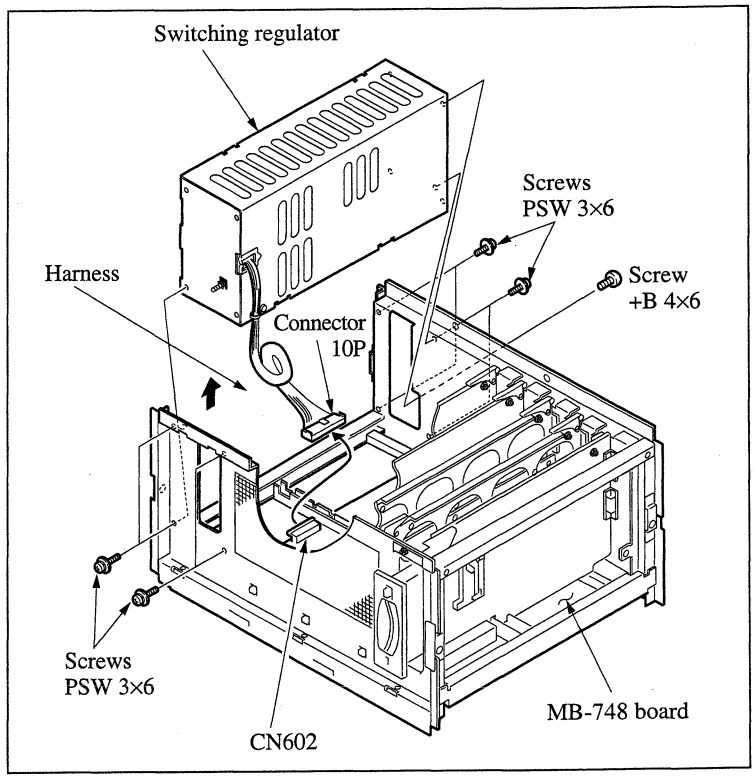
SECTION 2
SERVICE OVERVIEW

2-1. EXTERNAL PANEL REMOVAL



2-2. SWITCHING REGULATOR REMOVAL

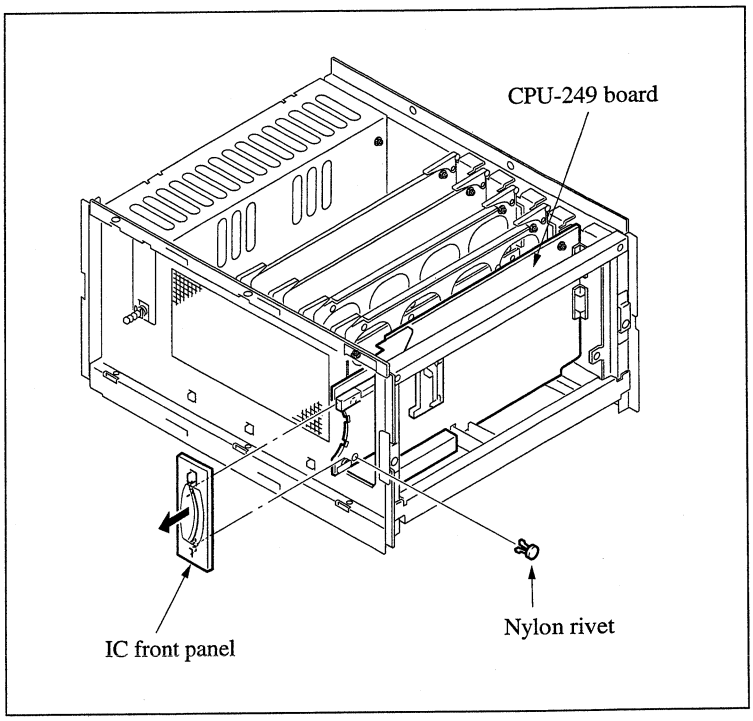
1. Remove the upper cabinet. (Refer to section 2-1.)
2. Remove the lower cabinet. (Refer to section 2-1.)
3. Remove the front panel. (Refer to section 2-1.)
4. Remove the eight screws (PSW 3×6) and one screw (B 4×6).
5. Raise the switching regulator slightly and remove the connector (CN602) from MB-748 board.



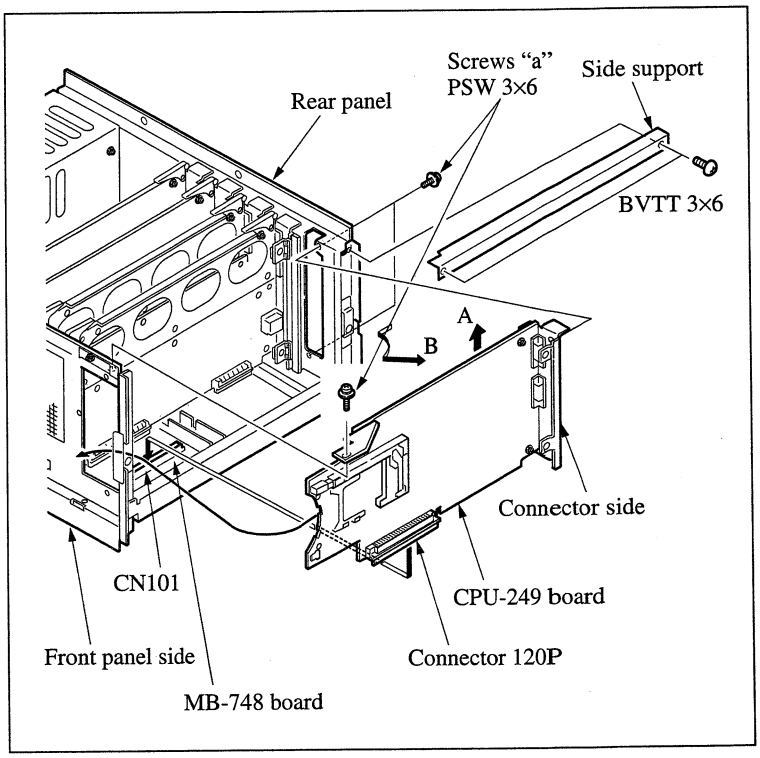
2-3. BOARD REMOVAL

2-3-1. CPU-249 Board Removal

1. Remove the upper cabinet. (Refer to section 2-1.)
2. Remove the lower cabinet. (Refer to section 2-1.)
3. Remove the front panel. (Refer to section 2-1.)
4. Loosen the one nylon rivet of the CPU-249 board slightly and remove the IC front panel in the direction of the arrow.

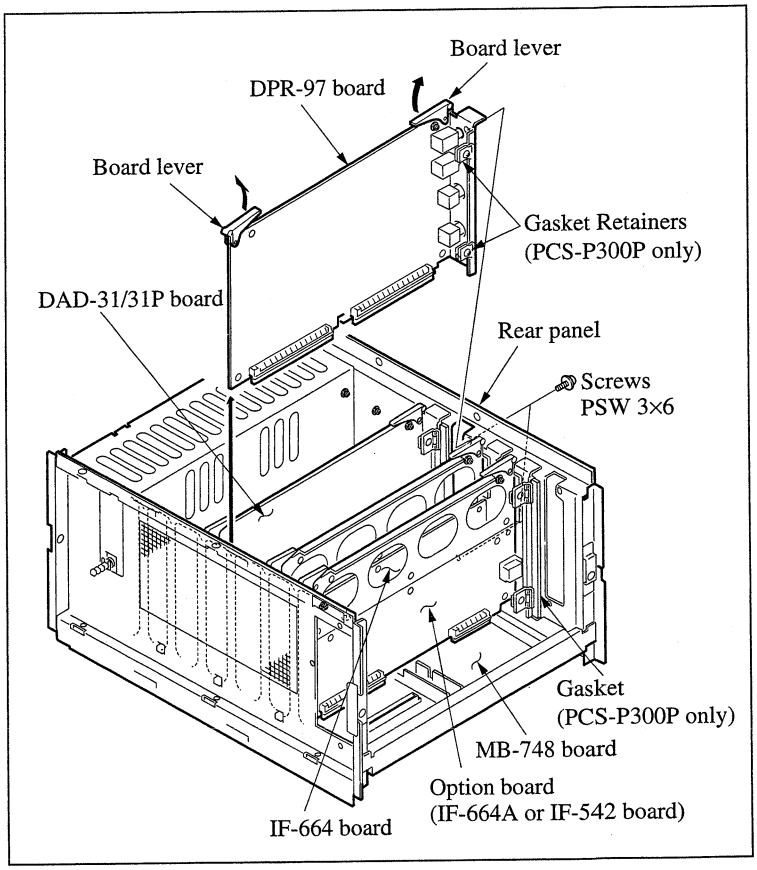


5. Remove the two screws (BVTT 3×6) and remove the side support.
6. Remove the three screws "a" (PSW 3×6) and remove the CPU-249 board by moving it in the directions of A and B.



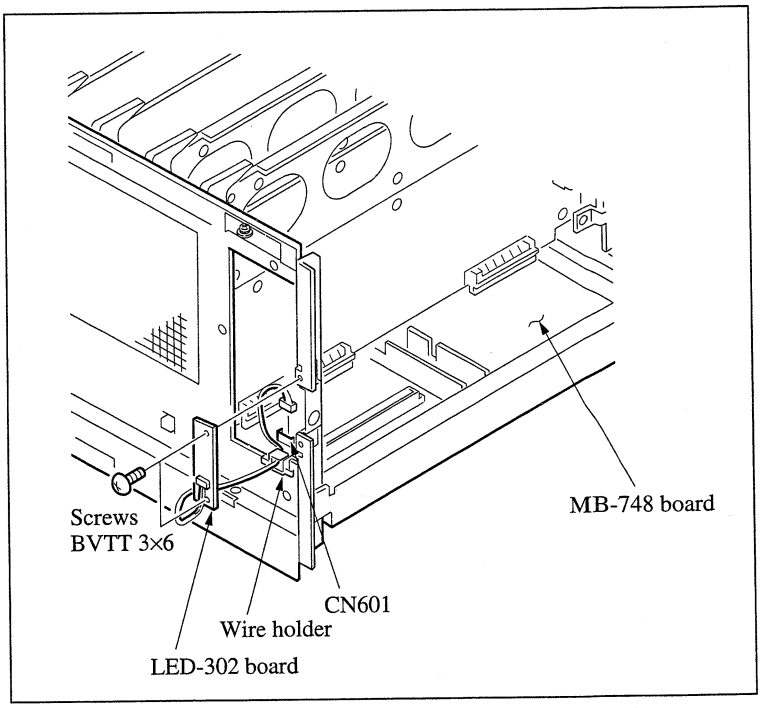
2-3-2. IF/DPR/DAD Boards Removal

1. Remove the upper cabinet. (Refer to section 2-1.)
2. Remove the lower cabinet. (Refer to section 2-1.)
3. Remove the two screws (PSW 3×6) of the respective boards from the rear panel side. While raising the board levers in the direction of the arrow simultaneously, remove the board upwards.



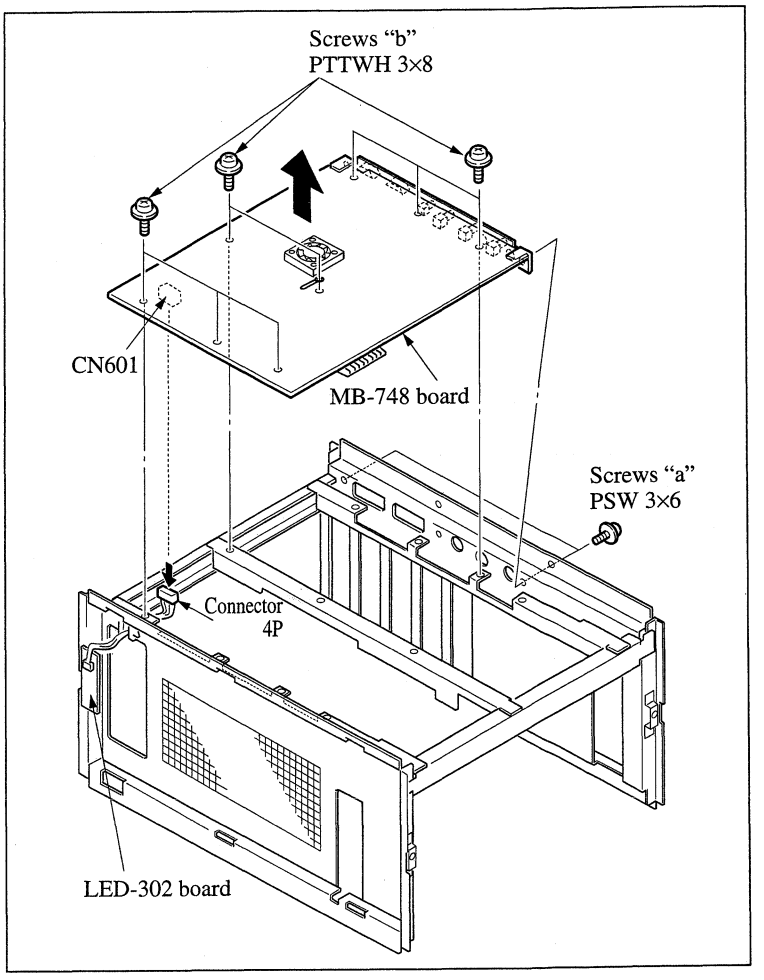
2-3-3. LED-302 Board Removal

1. Remove the upper cabinet. (Refer to section 2-1.)
2. Remove the lower cabinet. (Refer to section 2-1.)
3. Remove the front panel. (Refer to section 2-1.)
4. Remove the connector CN601 from the LED-302 board.
5. Remove the two screws (BVTT 3×6).



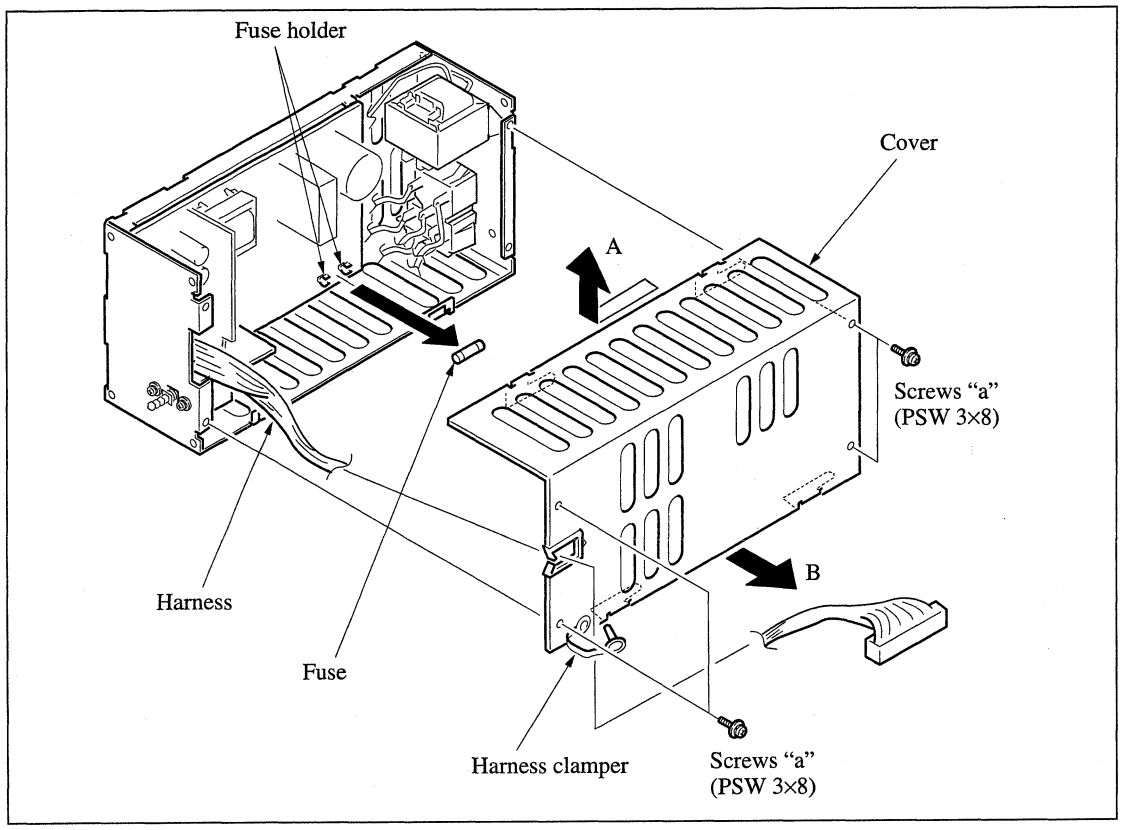
2-3-4. MB-748 Board Removal

1. Remove the upper cabinet. (Refer to section 2-1.)
2. Remove the lower cabinet. (Refer to section 2-1.)
3. Remove the front panel. (Refer to section 2-1.)
4. Remove the CPU-249 board.
   (Refer to section 2-3-1.)
5. Remove the IF/DPR/DAD boards.
   (Refer to section 2-3-2.)
6. Remove the connector CN601 from the LED-302 board.
7. Turn over the PCS unit. Remove the two screws "a" (PSW 3×6) and eight screws "b" (PTTWH 3×8), and remove the MB-748 board.



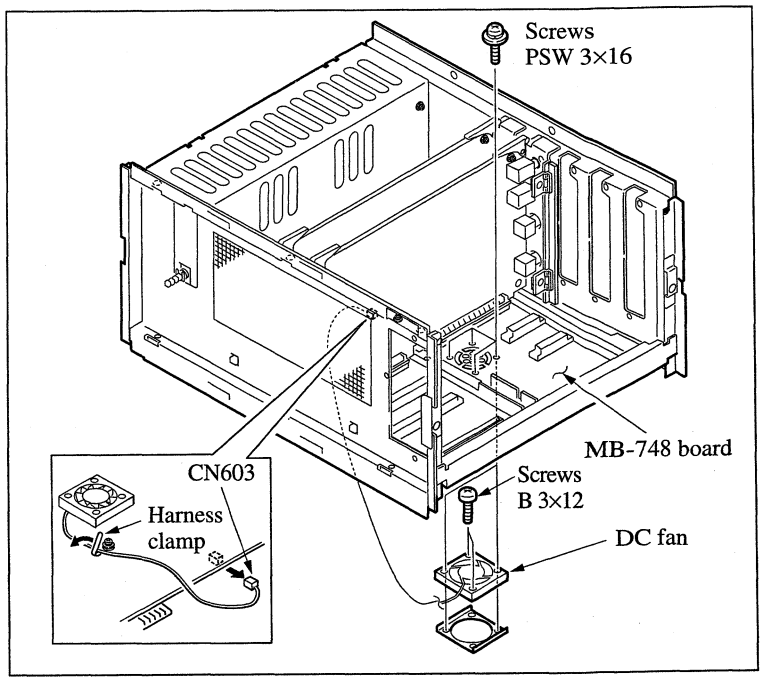
2-3-5. Fuse Removal

1. Remove the switching regulator. (Refer to section 2-2.)
2. Remove the harness clamper from the cover using a screwdriver tip (–).
3. Remove the four screws "a" (PSW 3×8) and remove the cover by moving it in the directions of A and B.
4. Remove fuse from the fuse holder. (UC : 3 A, 125 V / CE : 3 A, 250 V, time lag)

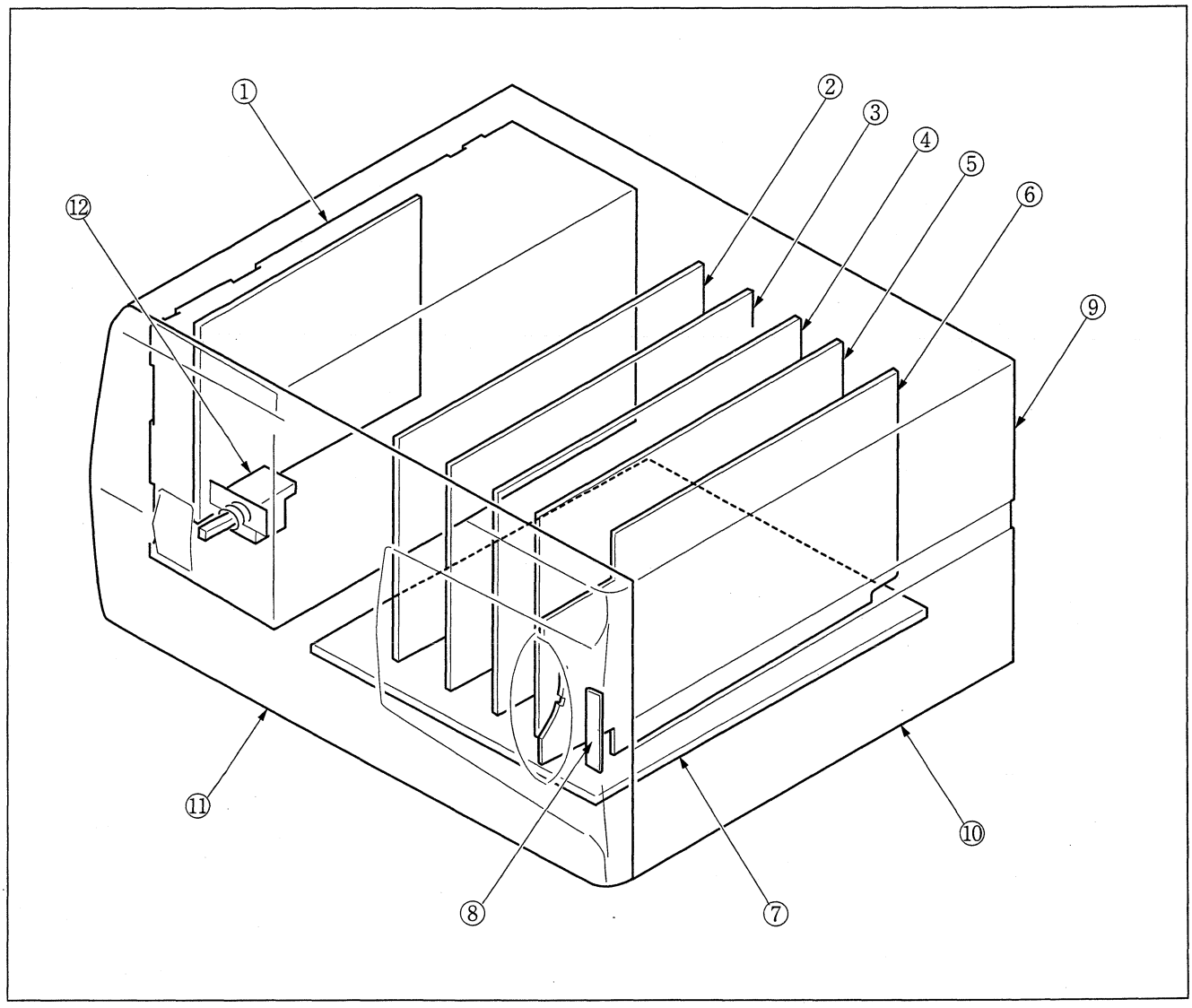


2-3-6. DC Fan Removal

1. Remove the top cabinet. (Refer to section 2-1.)
2. Remove the bottom cabinet. (Refer to section 2-1.)
3. Remove the front panel. (Refer to section 2-1.)
4. Remove the IF board. (Refer to section 2-3-2.)
5. Remove the connector CN603 from the MB-748 board. (Refer to section 2-1)
6. Remove the two screws (PSW 3×16), remove the DC fan harness from the harness clamp, and remove the two screws (B 3×12) and the DC fan.



2-4. CIRCUIT BOARDS LAYOUT



① Switching regulator (Power supply unit)
② DAD-31/31P board
③ DPR-97 board
④ IF-664 board
⑤ Option board (IF-664A board/PCS-I300 or IF-542 board/PCS-I500)
⑥ CPU-249 board
⑦ MB-748 board
⑧ LED-302 board
⑨ Upper cabinet
⑩ Lower cabinet
⑪ Front panel
⑫ AC switch

2-5. NOTES ON SPARE PARTS

2-5-1. Notes on Spare Parts

(1) Safety Related Components Warning

Components marked ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safety. Replace only with the components specified.

(2) Standardization of Parts

Spare parts supplied from the Sony Parts Center will sometimes have a different shape or external appearance from the parts originally used in the unit.

This is due to improvements, engineering changes, or standardization of parts.

This manual's exploded views and electrical parts lists indicate the part numbers of current standard parts.

(3) Stock of Parts

The parts marked with an "o" in the SP (Supply Code) column of the spare parts list are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow additional time for delivery.

(4) Units for Capacitors and Resistors

The following units are assumed in schematic diagrams, electrical parts lists and exploded views unless otherwise specified.

Capacitors : μF

Resistors : Ω

2-5-2. Replacement Procedure for Chip Parts

Tools required

Soldering iron : 20 W

If possible, use a soldering-iron tip heat-controller set to 270±10°C.

Braided wire (Desodering metal braid) :

SOLDER TAUL or equivalent

Sony part No. 7-641-300-81

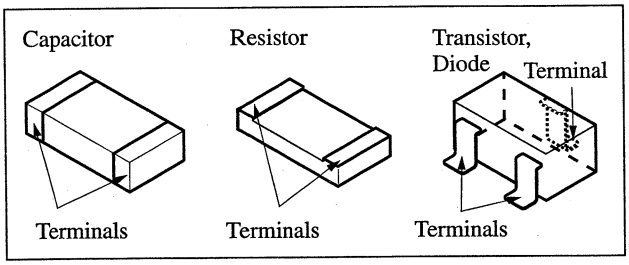
Solder : 0.6 mm dia. is recommended.

Sharp-pointed tweezers

Soldering conditions

Soldering iron temperature : 270±10°C

Soldering time : two seconds per pin



• Resistor and Capacitor Replacement

(1) Place the soldering-iron tip onto the chip part and heat it up until the solder melts.

When the solder melts, slide the chip part aside.

(2) Make sure that there is no pattern peeling, damage and/or bridging around the desoldering position.

(3) After removing the chip part, presolder the area in which the new chip is to be placed with a thin layer of solder.

(4) Place new chip part in position and solder both ends.

Note : Once a chip part has been removed never use it again.

• Transistors and Diodes Replacement

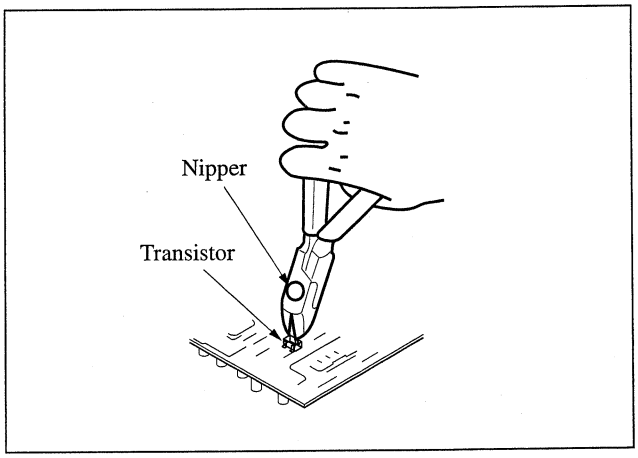
(1) Cut the terminals of the chip part with nippers.

(2) Remove the cut leads as above.

(3) Make sure that there is no pattern peeling, damage and/or bridging around the desoldering positions.

(4) After removing the chip part, presolder the area in which the new chip part is to be placed, with a thin layer of solder.

(5) Place new chip part in position and solder the terminals.



• IC Replacement

(1) Use the braided wire, remove the solder around the pins of the IC-chip.

(2) While heating up the pins, remove them one by one using sharp-pointed tweezers.

(3) Make sure that there is no pattern peeling, damage and/or bridge around the desoldering position.

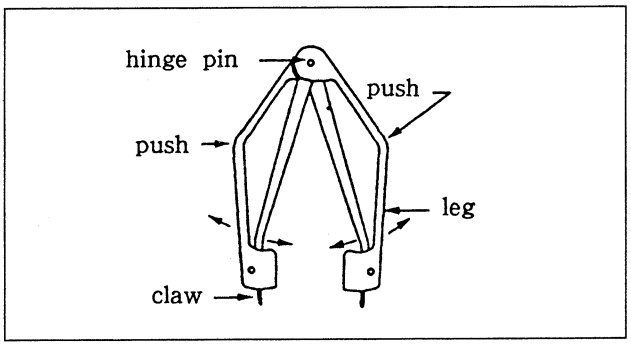
(4) After removing the chip part, presolder the area in which the new chip part is placed with a thin layer of solder.

(5) Place new chip part in the desired position and solder the pins.

2-5-3. PLCC IC Removal Method

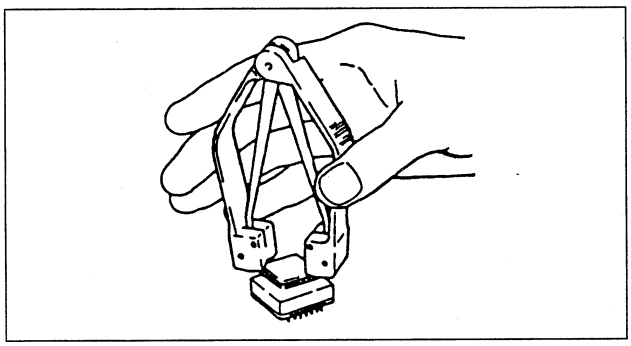
Use the following tool to remove the PLCC type IC from the IC socket. This tool can be used for ICs with from 20 to 124 pins.

IC extraction tool for PLCC socket
Sony part number: J-6035-070-A

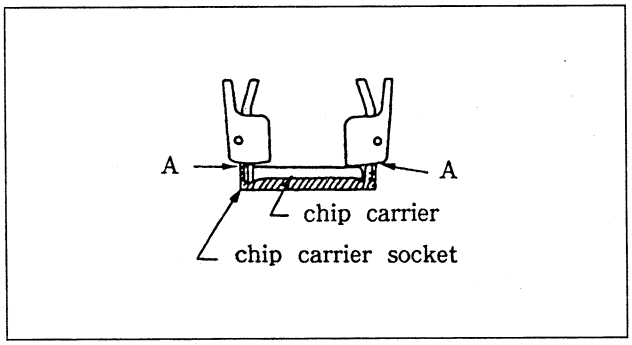


Note: • Do not pull up the tool itself to remove the IC chips.
• Do not grip IC chips too strongly with the extracting tool.

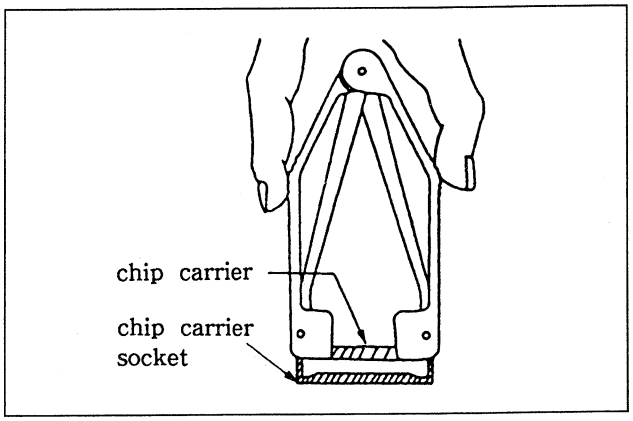
(1) Adjust the distance between the legs of the tool to the length of the IC socket slots as shown.



(2) Insert the extraction claws of the tool tip into the IC socket slots, and insert the tool until part "A" of the tool touches the socket as shown.



(3) Hold the ribbed part of the tool as shown and apply a small downward pressure on the socket.



(4) Gently squeeze the legs together. The legs will then straighten, to cause the claws of the tool tip to grip the IC chip, and will extract the IC.

(5) After removing the IC, relax your grip on the tool to release the IC from the tool.

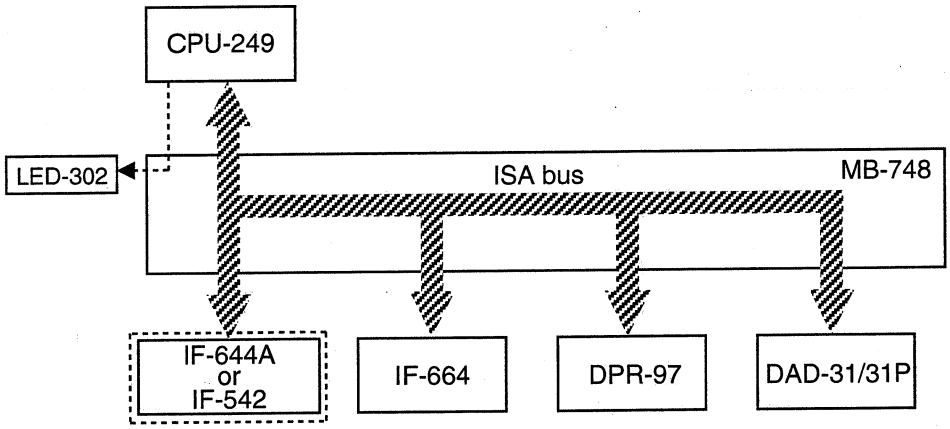
SECTION 3
OUTLINE OF OPERATION AND TROUBLESHOOTING

3-1. CPU-249 BOARD

3-1-1. Outline of CPU-249 Board Operation

3-1-1-1. Outline

Structure of PCS-P300/P300P and operation of CPU-249 board



The PCS-P300/P300P consists of the following 5 basic circuit boards: CPU-249, IF-664, DPR-97, DAD-31/31P and MB-748, and the 2 optional boards (IF-664A or IF-542). Main functions of each circuit board are as follows:

CPU-249 ..... CPU, memory control, I/O control for each boards and IC card control
IF-664 ..... ISDN BRI line interface
DPR-97 ..... Video image codec, audio codec and echo canceller
DAD-31/31P ..... Video signal input/output and menu display control

Connections between CPU-249 and IF-664, DPR-97 and DAD-31/31P are performed by the bus signals conforming to ISA.
Block diagram of the CPU-249 board is shown in Fig. 3-1-1.

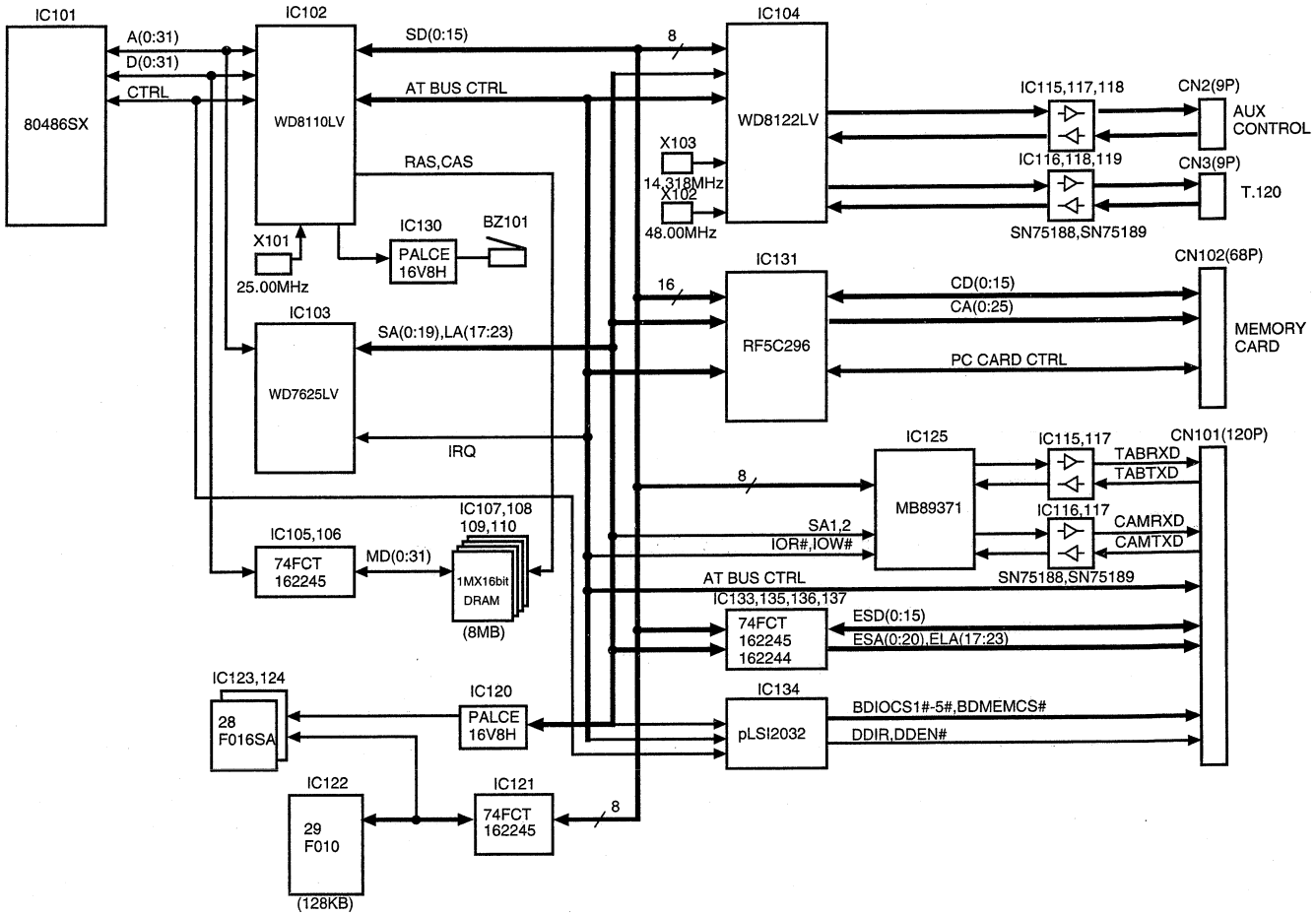
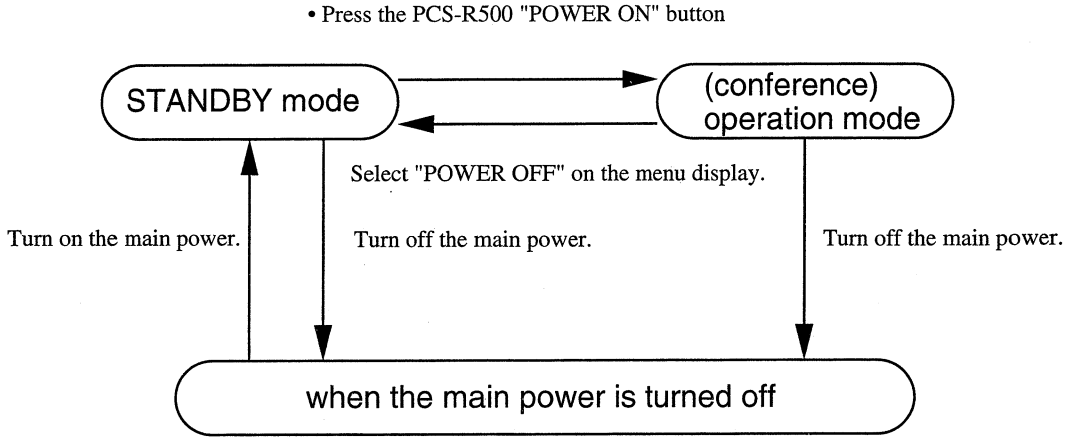


Fig. 3-1-1. CPU-249 Board Block Diagram

3-1-1-2. Basic operation of the CPU-249 board

PCS-P300/P300P operation mode transition diagram



1) Main power on → STANDBY mode
The entire P300/P300P system is reset, the respective circuit boards are initialized and the STANDBY mode is set. When the POWER switch is pressed, outputs of the respective power supplies of +5 V, +6 V and ±12 V are started. +5 V voltage is monitored in the CPU-249 board which outputs the reset pulse to the chip set (IC103). When the chip set receives the reset pulse, it outputs the reset signal to the system controller (IC102), super I/O (IC104) and the respective circuit board. The CPU (IC101) is also reset by the system controller. When the CPU is reset, it reads the program code from the boot ROM (IC122) and executes it so that the system controller built-in peripherals (memory controller, timer, DMA controller and interrupt controller) and the super I/O built-in peripherals (serial controller and parallel controller) are initialized. The CPU perform the memory check, then moves from the real mode to the protect mode so that the real time OS is started up. The real time OS executes the initializing task of each circuit board, then sets the STANDBY mode.

2) STANDBY mode
In this mode, the +6 V and ±12 V power supplies are turned off, then the system enters the power saving mode. In the power saving mode, the system is waiting for the wake-up request to enter the (conference) operation mode. When the "SLEEP" signal of the CPU-249 board is set to high level, transition into the STANDBY mode is notified to each block. When the system enters the STANDBY mode, +6 V and ±12 V are turned off by the relays which are mounted on MB-748 board, and clock is stopped in each circuit board to save the power consumption. In the STANDBY mode, the CPU is waiting for the request to enter the (conference) operation mode which is the "SYSTEM ON" signal coming from the remote commander (PCS-R500).

3) STANDBY mode → (conference) operation mode
The +6 V and ±12 V power supplies are turned on again and the system is initialized. The CPU is reset again and the initializing procedure in the same way as item 1) is executed, When initialization is completed, the program is started to be downloaded to the video image codec and the echo canceller DSPs. When the downloading is completed, the menu display and icon are shown and the system enters the (conference) operation mode.

4) (conference) operation mode → STANDBY mode
When the "POWER OFF" is selected on the menu display, the dial list and the setup data are saved into the boot ROM. When writing is completed, the +6 V and ±12 V power supplies are turned off, and the system enters the STANDBY mode.

3-1-1-3. Description of the respective blocks

1. CPU and ISA bus control block

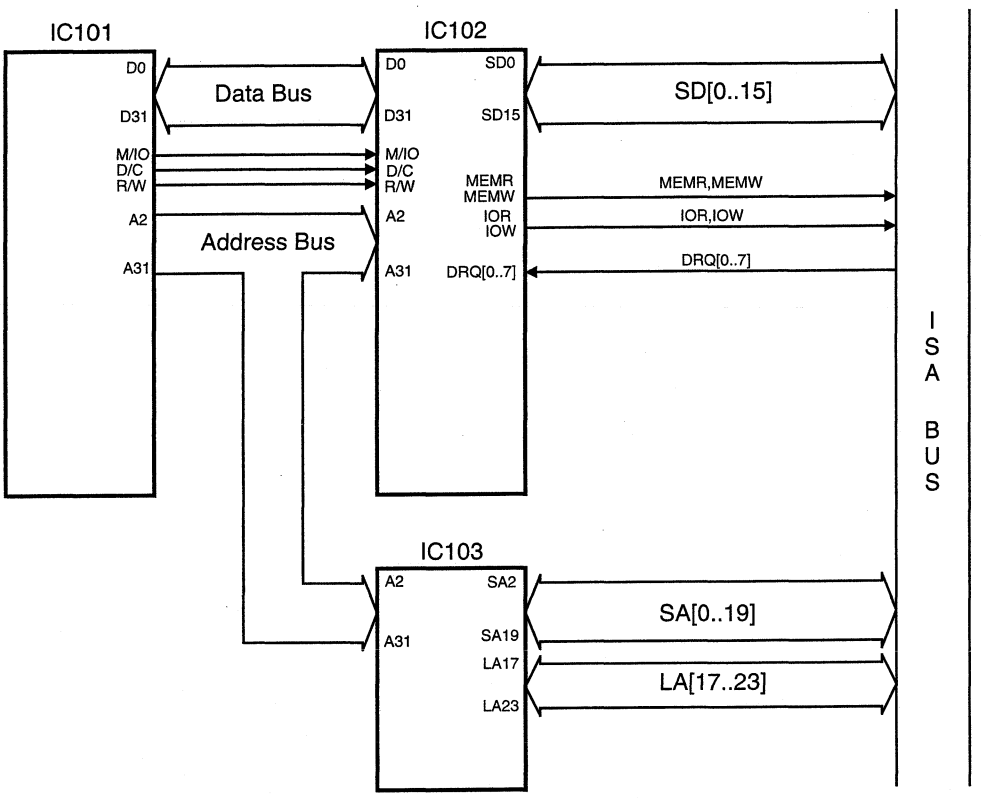


Fig. 3-1-2. CPU and ISA Bus Control Block

The address bus, data bus and control signal of the CPU (IC101) are converted to the ISA bus signal using the CPU peripheral ICs which are the chip-set of IC102 and IC103. IC102 has the function of converting the data bus from 32-bit to 16-bit/8-bit, and converting of the control signal. IC103 has the function of converting the address bus to the ISA address bus signal of SA and LA.

2. DRAM control block

Access to DRAMs is accomplished using data bus of the CPU (IC101) via bus transceiver of IC105 and IC106.
The address and RAS, CAS are controlled by the DRAM controller which is built-in IC102. Different RAS, CAS signals are used for each bank.

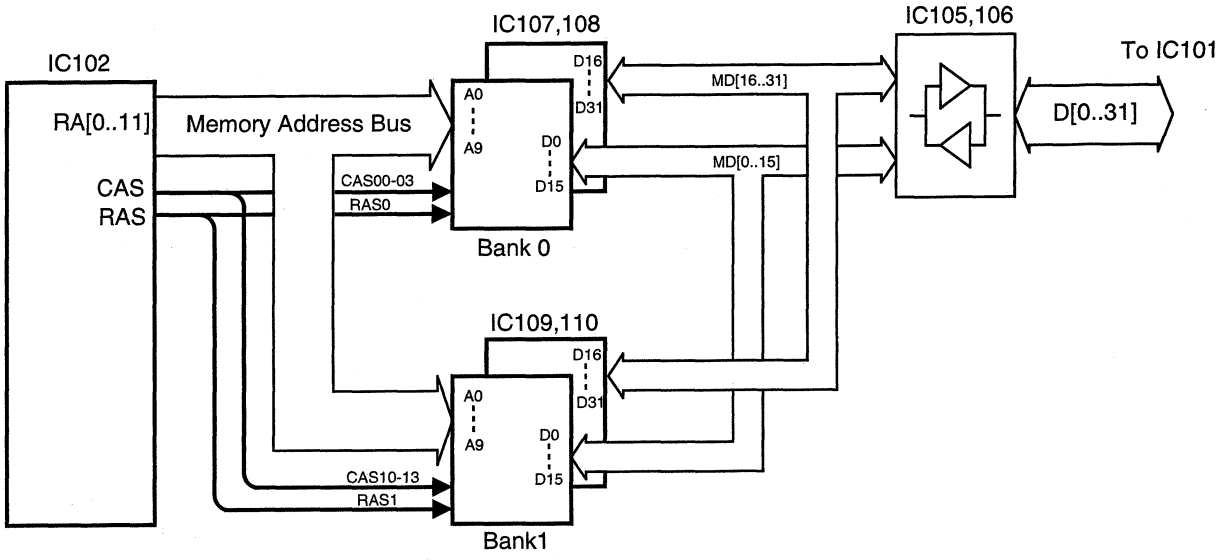


Fig. 3-1-3. DRAM Peripheral Circuit Block

3. Flash memory block

Flash memories in which the software program code is stored, are located on the ISA bus.
The IPL (Initial Program Loader) code and some parameter data are stored in IC122. The program code which is downloaded from Memory card is stored in IC123, 124. Mini-debugger can operate without IC123, 124, but normal operation is accomplished by using the code of all Flash memories.
After the CPU is reset, execution of the program is started from the address FFFFFFF0, but the IPL code which is stored in IC122 is located at the address 000FFFF0. However, the chip set performs the address conversion so that the execution of the program is started from the address 000FFFF0.

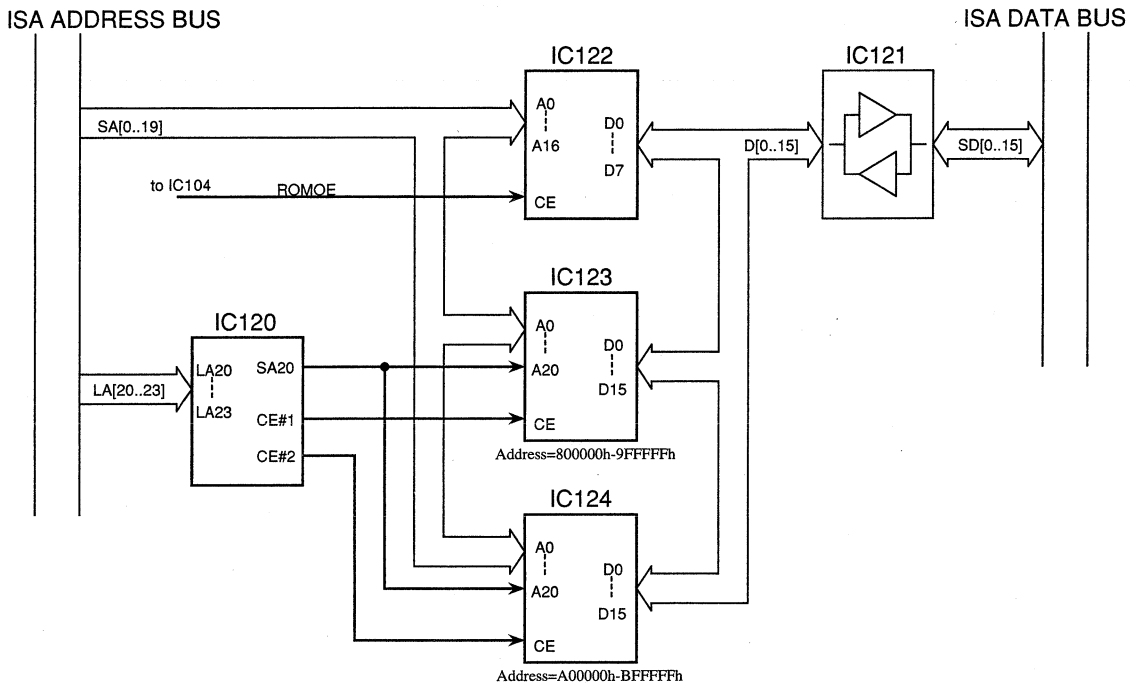


Fig. 3-1-4. Flash Memory Block

Memory map of the CPU-249 is shown in Fig. 3-1-5.

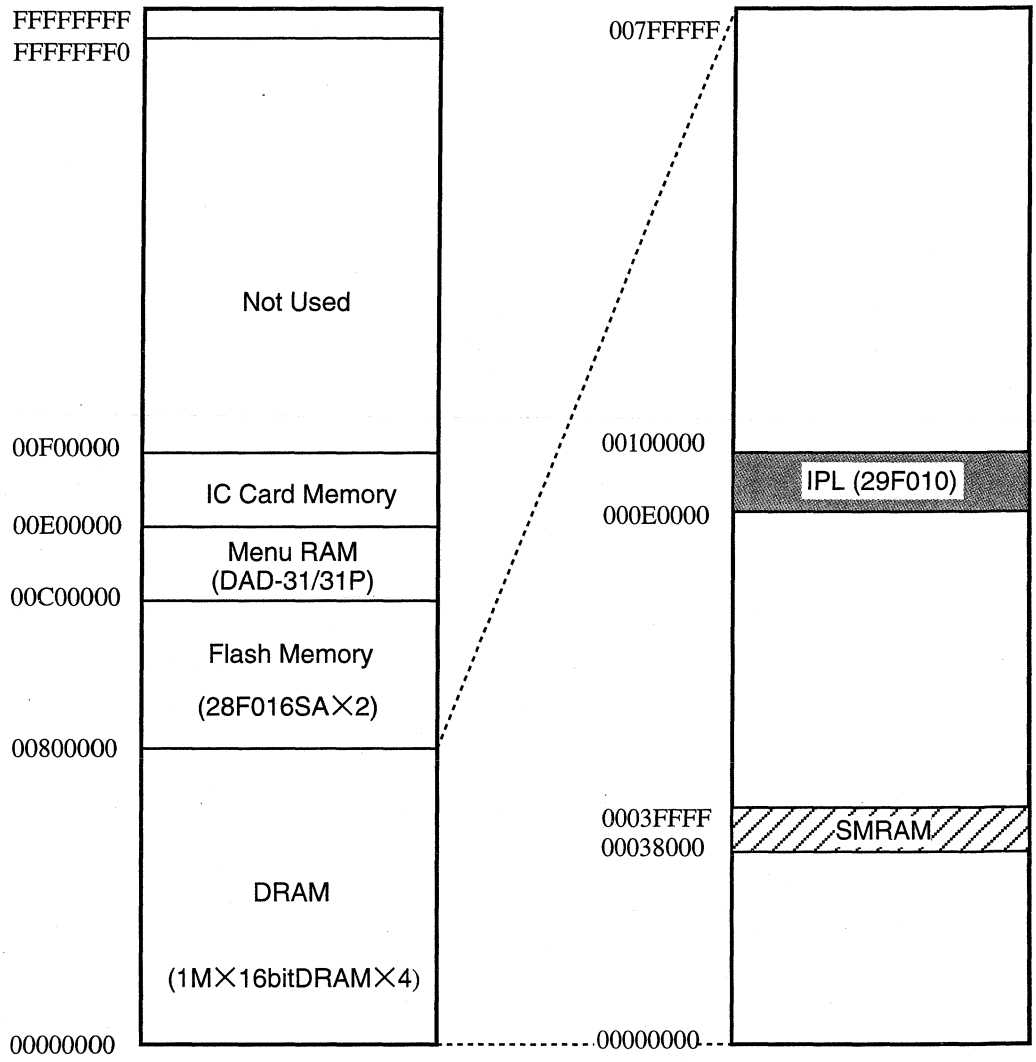


Fig. 3-1-5. CPU-249 Memory Map

4. DMA control block

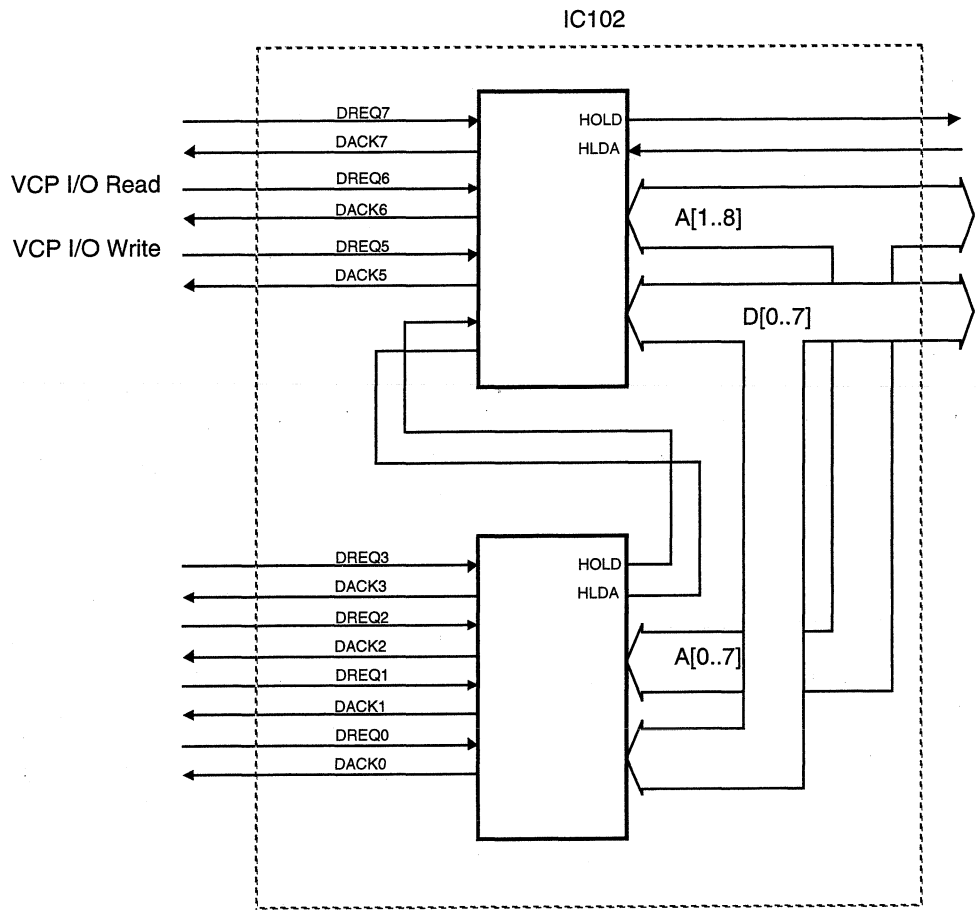


Fig. 3-1-6. DMA Control Block

The IC102 built-in DMA controller has 4 channels of the 8-bit DMA and 3 channels of 16-bit DMA.
Priority is shown below:

1. Not used
2. Not used
3. Not used
4. Not used
5. VCP-1 I/O Write (DPR-97) 16-bit DMA
6. VCP-1 I/O Read (DPR-97) 16-bit DMA
7. Not used

5. Interrupt control block

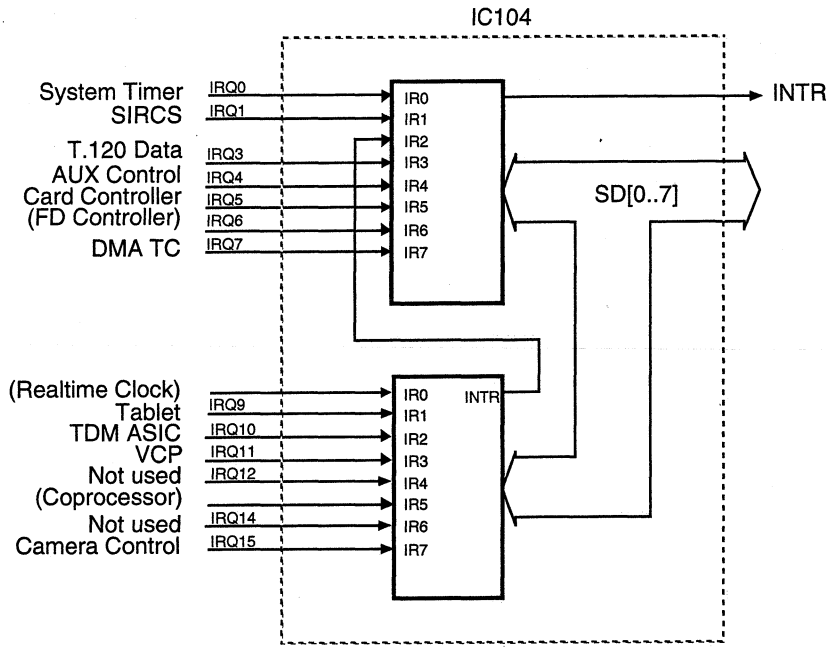


Fig. 3-1-7. Interrupt Control Block

The interrupt controller is constituted as the built-in peripheral of the super I/O (IC104) as shown in the above illustration.
Two controllers equivalent to Intel 8259 are connected in cascade connection enabling to process 15 interrupt.
Interrupt request is read at the rise up edge.

Priority of interrupt is shown below:

1. System Timer
2. SIRCS Input [IF-664]
3. Realtime Clock (not used)
4. Tablet/VID CTRL
5. TDM ASIC [IF-664]
6. VCP [DPR-97]
7. Not used
8. Coprocessor (not used)
9. Not used
10. Camera Control [CPU-249]
11. T.120 Data [CPU-249]
12. AUX Control [CPU-249]
13. Card Controller [CPU-249]
14. Floppy Disk Controller (not used)
15. DMA TC [DPR-97]

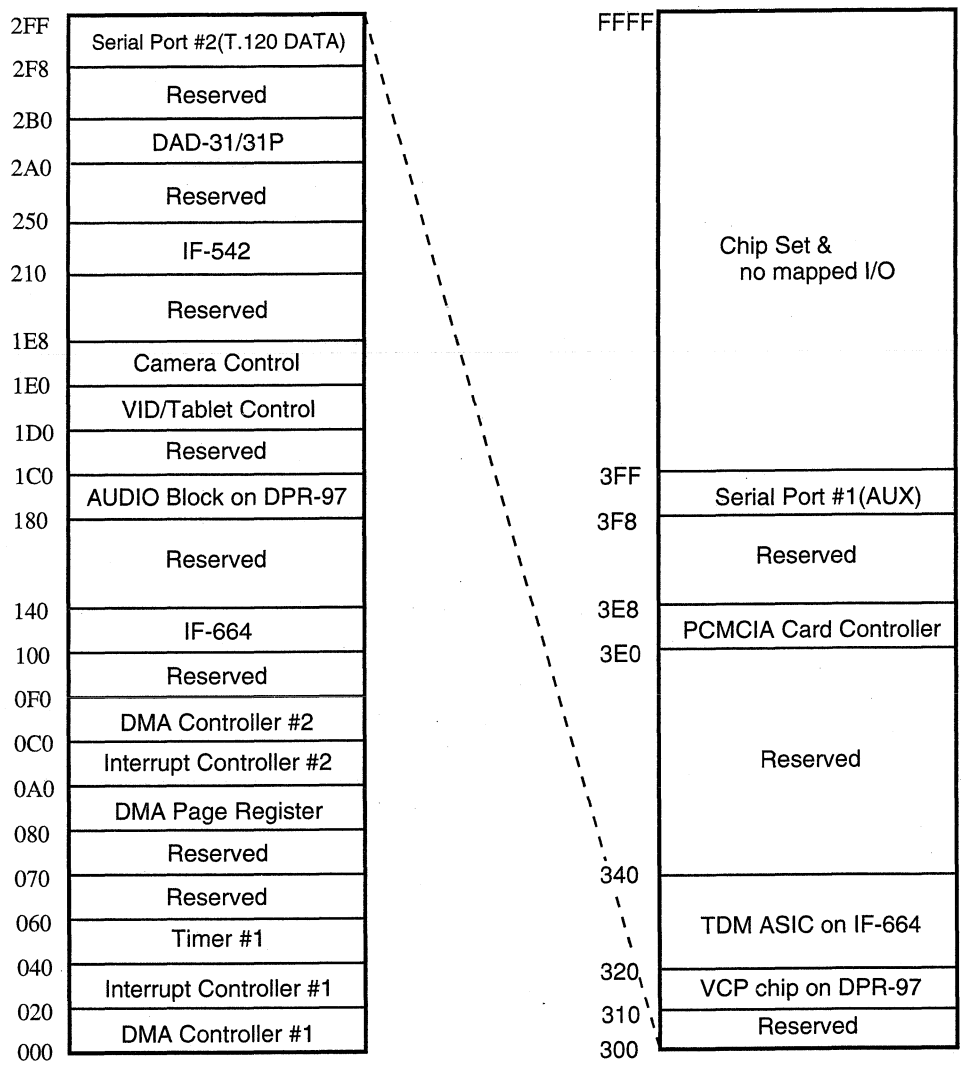


Fig. 3-1-8. I/O Port Address

3-1-2. CPU-249 Board Operation Check and Troubleshooting

[Equipment required]

- PCS-3000/3000P system
  (
  Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Microphone unit (PCS-A300)
  Remote commander (PCS-R500)
)
- Oscilloscope
- Video monitor
- Camera unit connection cable (supplied accessory)

[Service tools]

- RS-232C terminal (PC/AT compatible machine with communication software "CCT")
- RS-232C cross cable
- S cable

[Preparation]

1) Remove the upper cabinet of the rollabout processor (PCS-P300/P300P).
2) Set up the PCS-3000/3000P system to the normal operating condition.
3) Connect the RS-232C terminal (to be abbreviated simply as terminal hereafter) to the AUX CONTROL terminal of the rollabout processor (PCS-P300/P300P).
4) Start up the communication software "CCT" which is installed in the terminal. Turn on the main power of the PCS-3000/3000P system (enter the debug mode).
5) Turn on the main power from the remote commander (PCS-R500).

[Operation Check]

Operation sequence of the CPU-249 board after the main power is turned on is as follows:

① Chip-set initialization
② DRAM read and write check
③ Transition to the protect mode
④ Peripheral I/O initialization
⑤ Interrupt mask enable
⑥ "STAND BY" LED starts flashing (orange LED on the front panel)
⑦ Program downloading to the VCP
⑧ IF-664/IF-664A/IF-542 boards initialization
⑨ Program downloading to the echo canceler
⑩ Menu screen display

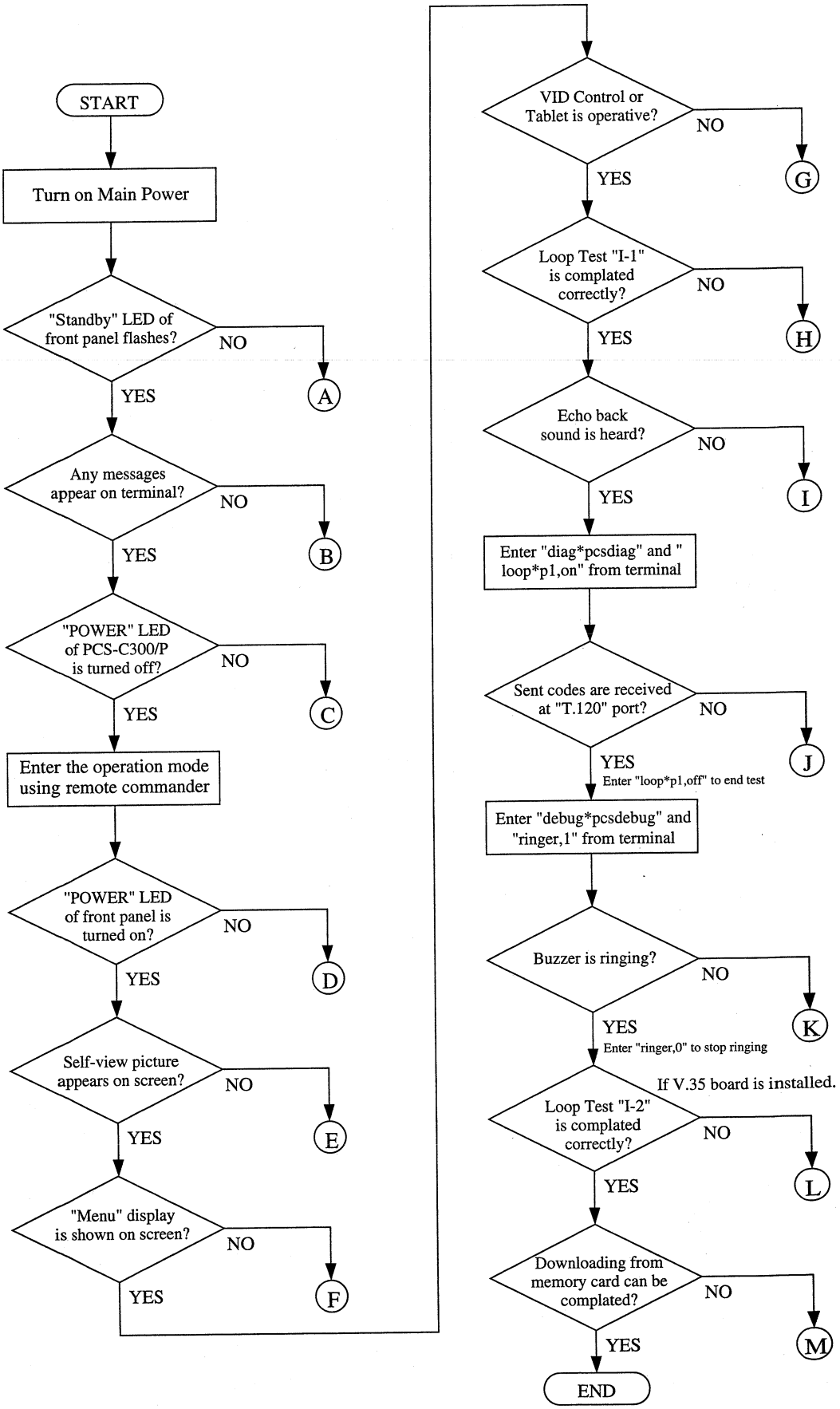
From steps ① to ③: Codes in the IPL (IC122) are executed.
From steps ④ to ⑩: Codes in the flash memory (IC123, IC124) are executed. Among them, steps from ⑦ to ⑩ are executed under multi task.

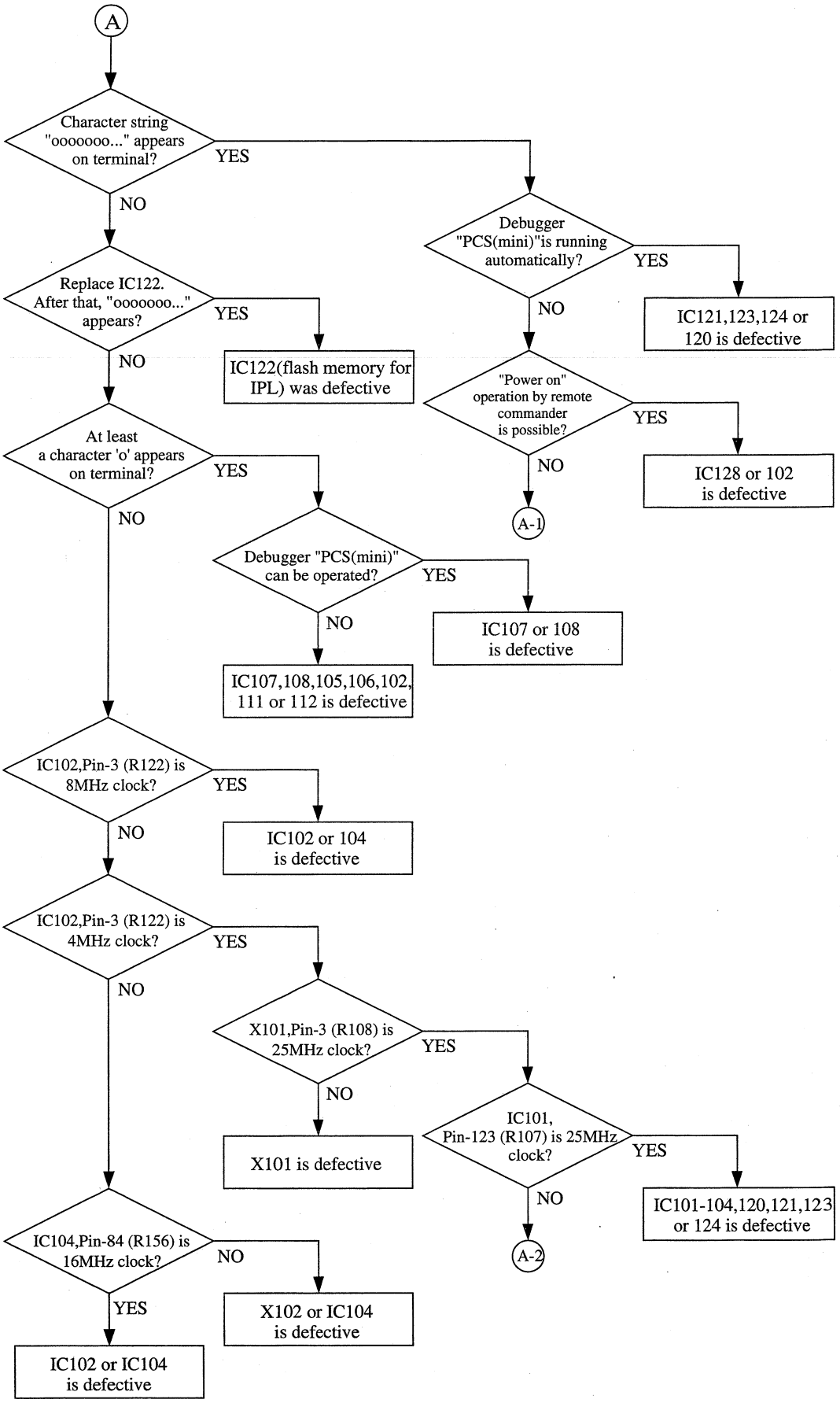
The above described sequence is divided into two groups:

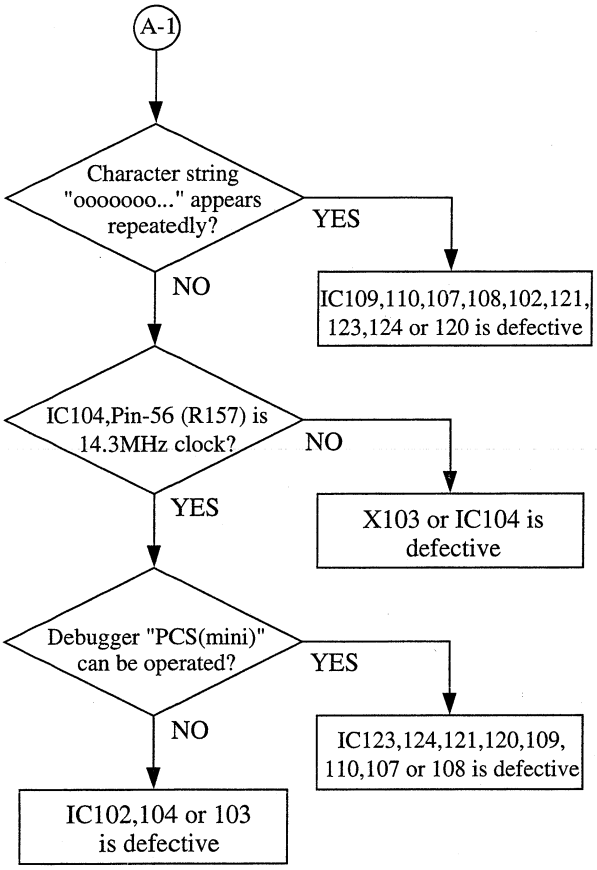
- Steps related to the internal operation of the CPU-249 board only. (① to ⑥)
- Steps related to the operation of the CPU-249 board with other boards connected. (⑦ to ⑩)

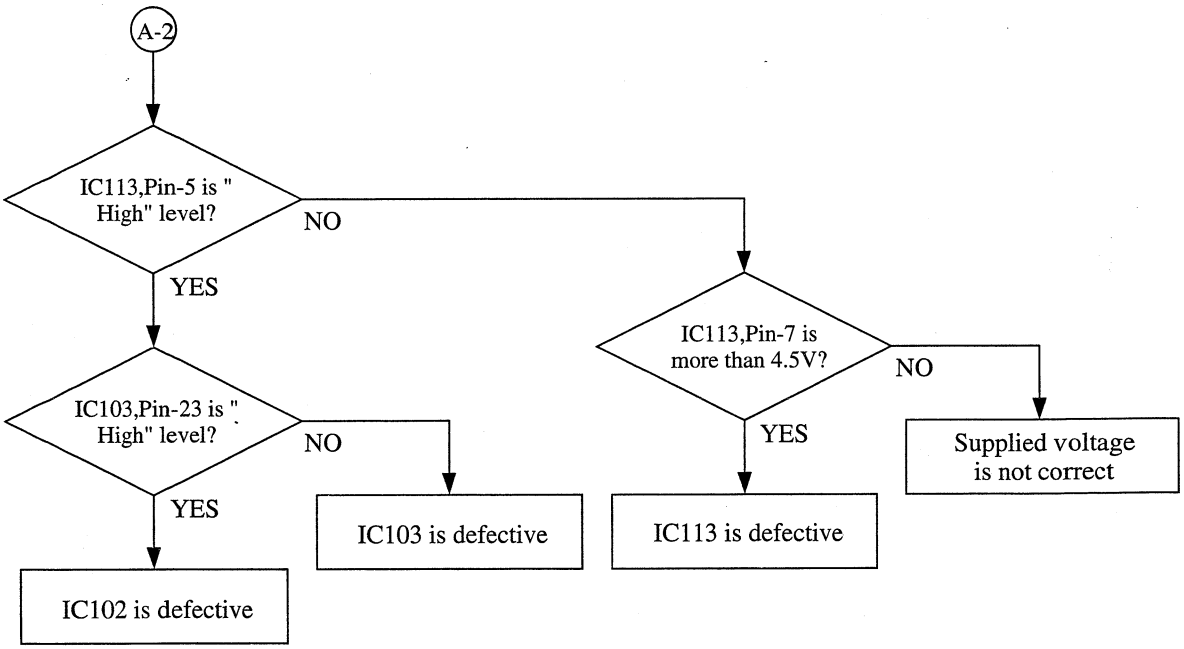
The probable causes of troubles, when the system cannot be operated correctly, are shown in the following flow charts and comments.

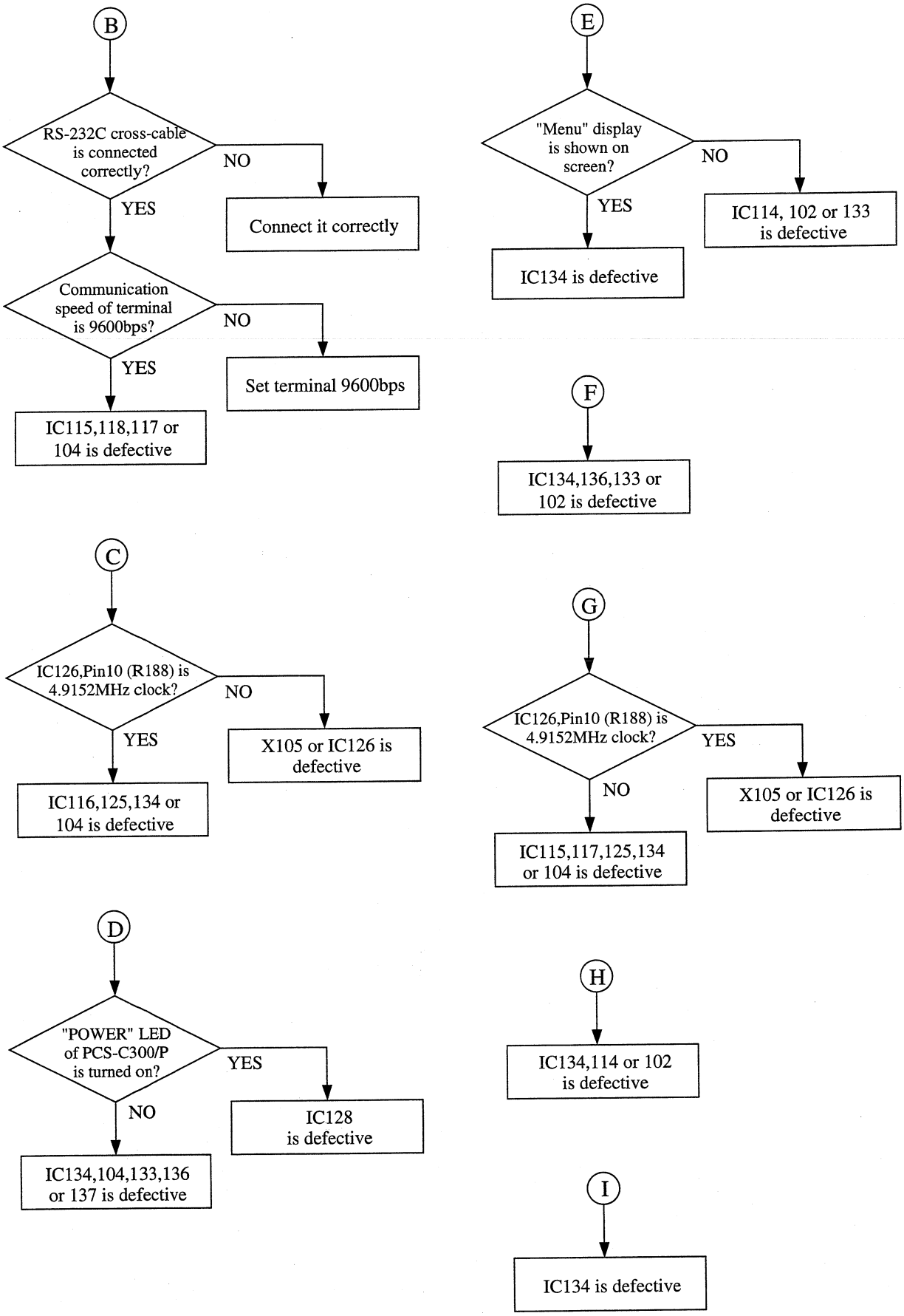
[Flowchart]

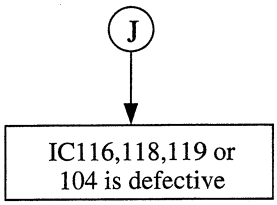

START
Turn on Main Power
"Standby" LED of front panel flashes?
NO
A
YES
Any messages appear on terminal?
NO
B
YES
"POWER" LED of PCS-C300/P is turned off?
NO
C
YES
Enter the operation mode using remote commander
"POWER" LED of front panel is turned on?
NO
D
YES
Self-view picture appears on screen?
NO
E
YES
"Menu" display is shown on screen?
NO
F
YES
VID Control or Tablet is operative?
NO
G
YES
Loop Test "I-1" is complated correctly?
NO
H
YES
Echo back sound is heard?
NO
I
YES
Enter "diag*pcsdiag" and " loop*p1,on" from terminal
Sent codes are received at "T.120" port?
NO
J
YES
Enter "loop*p1,off" to end test
Enter "debug*pcsdebug" and "ringer,1" from terminal
Buzzer is ringing?
NO
K
YES
Enter "ringer,0" to stop ringing
If V.35 board is installed.
Loop Test "I-2" is complated correctly?
NO
L
YES
Downloading from memory card can be complated?
NO
M
YES
END

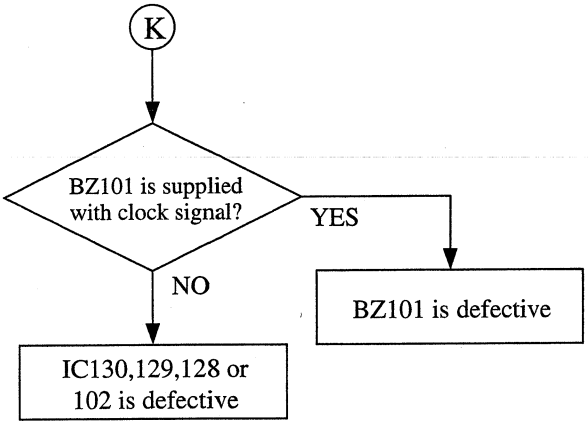

A
Character string "ooooooo..." appears on terminal?
YES
NO
Debugger "PCS(mini)"is running automatically?
YES
IC121,123,124 or 120 is defective
NO
Replace IC122. After that, "ooooooo..." appears?
YES
IC122(flash memory for IPL) was defective
NO
"Power on" operation by remote commander is possible?
YES
IC128 or 102 is defective
NO
A-1
At least a character 'o' appears on terminal?
YES
NO
Debugger "PCS(mini)" can be operated?
YES
IC107 or 108 is defective
NO
IC107,108,105,106,102, 111 or 112 is defective
IC102,Pin-3 (R122) is 8MHz clock?
YES
IC102 or 104 is defective
NO
IC102,Pin-3 (R122) is 4MHz clock?
YES
NO
X101,Pin-3 (R108) is 25MHz clock?
YES
NO
X101 is defective
IC101, Pin-123 (R107) is 25MHz clock?
YES
IC101-104,120,121,123 or 124 is defective
NO
A-2
IC104,Pin-84 (R156) is 16MHz clock?
NO
X102 or IC104 is defective
YES
IC102 or IC104 is defective

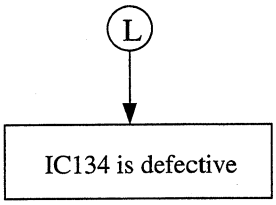

A-1
Character string "oooooooo..." appears repeatedly?
YES
IC109,110,107,108,102,121, 123,124 or 120 is defective
NO
IC104,Pin-56 (R157) is 14.3MHz clock?
NO
X103 or IC104 is defective
YES
Debugger "PCS(mini)" can be operated?
YES
IC123,124,121,120,109, 110,107 or 108 is defective
NO
IC102,104 or 103 is defective

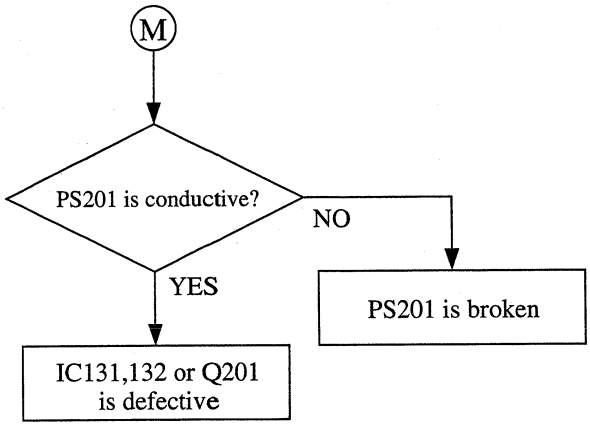

A-2
IC113,Pin-5 is " High" level?
NO
YES
IC113,Pin-7 is more than 4.5V?
NO
YES
Supplied voltage is not correct
IC103,Pin-23 is " High" level?
NO
YES
IC103 is defective
IC113 is defective
IC102 is defective


B
RS-232C cross-cable is connected correctly?
NO
Connect it correctly
YES
Communication speed of terminal is 9600bps?
NO
Set terminal 9600bps
YES
IC115,118,117 or 104 is defective
E
"Menu" display is shown on screen?
NO
IC114, 102 or 133 is defective
YES
IC134 is defective
F
IC134,136,133 or 102 is defective
C
IC126,Pin10 (R188) is 4.9152MHz clock?
NO
X105 or IC126 is defective
YES
IC116,125,134 or 104 is defective
G
IC126,Pin10 (R188) is 4.9152MHz clock?
YES
X105 or IC126 is defective
NO
IC115,117,125,134 or 104 is defective
D
"POWER" LED of PCS-C300/P is turned on?
YES
IC128 is defective
NO
IC134,104,133,136 or 137 is defective
H
IC134,114 or 102 is defective
I
IC134 is defective


J
IC116,118,119 or
104 is defective


K
BZ101 is supplied
with clock signal?
YES
NO
BZ101 is defective
IC130,129,128 or
102 is defective


L
IC134 is defective


M
PS201 is conductive?
NO
YES
PS201 is broken
IC131,132 or Q201
is defective

3-2. DAD-31/31P BOARD

Flow of the video signal system of this model is shown in Fig. 3-2-1.
The overall block diagram of the DAD-31/31P board is shown in Fig. 3-2-2.

3-2-1. Outline of DAD-31/31P Board Operation

3-2-1-1. Outline

The DAD-31/31P board has the following functions: Input/output of the video signals to and from the camera unit (PCS-C300/C300P) and external devices. Conversion of the input signals to the Y, U and V digital signals (ITU-R601 specifications). Input/output the digital signal to and from the DPR-97 board. And generation and display of the menu displays.
Regarding the signals input, the Y/C input from the camera unit (PCS-C300/C300P) and other one Y/C input (AUX1) are provided. One channel of composite input (AUX2) is provided. Regarding the signal output, one Y/C (MONITOR) output and one composite (AUX) output are provided. Both outputs have the same signal contents.
Input signal flows as follows: The composite input signal is separated into Y and C signals. The separated Y and C signals, and two Y/C inputs totaling three input signals are input to the selector. The output signal from the selector is decoded into the Y, U and V signal by the decoder, which are converted to the digital signal by the A/D converter and are output to the DPR-97 board. This output is returned and sent to the encoder block of this board for AD to DA bypass. Generation of clock signal which is synchronous with the selected input signal, detection of horizontal sync signal, vertical sync signal and field identification are performed and are output to the DPR-97 board.
Regarding the output signals, the signals for menu display are generated which are controlled by the CPU-249 board via bus line. These signals, the Y, U and V signals from the DPR-97 board, the returned signal from the A/D converter in this board are input to the selector. One set of digital Y, U and V signals is formulated by selecting or combining the above described input signals as required. One set of the output signals is output to external devices in two forms of analog Y/C and composite signals using the encoder and D/A converter. At the same time, the clock which is generated inside the board is sent to the DPR-97 board and is used as the sync reference of the output system. The controls such as mode switching are performed by the bus line coming from the CPU-249 board.

3-2-1-2. Input Block (schematic diagram 1/9)

Regarding the inputs, the two Y/C inputs which are CAMERA UNIT IN (signal is input from the MB-748 board to CN502), and AUX1 IN (CN503), and one composite signal which is AUX2 IN (CN504) totaling three inputs are provided. The composite input signal is separated into Y and C signals which are input to the video selector together the two input Y/C signals. The signal output from the selector is decoded, A/D converted and sent to the signal process block of both motion picture and still picture of the DPR-97 board. The returned video signal of the DAD-31/31P board is also input to the selector, the selector is the 4-input selector.
Selection of the video selector is controlled by the parallel I/O μPD71055 (IC102) from the CPU-249 board via bus line. This block has buffers, video switchers, amplifiers and others. All circuit consists of transistor discrete circuit. (Q1 to Q36 and peripherals)

3-2-1-3. Y/C Separator Block (schematic diagram 2/9)

The Y/C separator circuit is necessary to process the composite input signal from the AUX2 IN connector. The 3-line digital comb filter (CXD2024, IC1) is used for Y/C separation. When an analog composite signal is input to this IC, the A/D conversion, digital signal process and D/A conversion are performed inside the IC. At the same time, analog Y and C signals are separated and output. Sampling clock of this comb filter is generated by CXA1686 (IC2). This IC reproduces the continuous 4 times subcarrier wave using the burst signal of the input composite signal as the reference. Operating frequency is 14.31818 MHz for NTSC, 17.734475 MHz for PAL. The composite input is passed through the filter FL2, the Y output is passed through FL3 and the C output is passed through FL1 for the purpose of anti-aliasing.

3-2-1-4. Decoder Block (schematic diagram 3/9)

The chroma signal is converted to the U and V signals by this decoder. The chroma signal which is selected by the input block is converted to the U and V signals and output to the A/D converter block.
The required signal processes to decode such as sync separation, generation of burst gate pulse, ACC, subcarrier regeneration and others are performed by MC44011 (IC3). The 1H delay, addition and subtraction which are required for PAL signal decode are performed by MC44140 (IC4). Output from this IC becomes the U and V signals.
The parameter setting (i.e., control) inside MC44011 (IC3) including the sync system (input side) as described below, are all performed by CXP5068H-242Q (IC19) via I^2C bus (2-bit serial interface specified by Philips Inc.)

3-2-1-5. Sync System (Input Side) (schematic diagram 3/9, 5/9)

The Y signal which is selected by the input block is sent to MC44011 (IC3). This IC separates the sync signals from the Y signal and generates the horizontal sync signal which is used as the reference of PLL by AFC. This IC has the functions of vertical sync separation and field identification too. Because MC44011 has internal phase comparator for PLL, amplifiers and VCO, a PLL can be easily constituted by adding frequency divider (IC5 to IC9) outside in order to generate the clock signals (27 MHz and 13.5 MHz) to be used as the reference for input system such as A/D conversion, and also generate the reproduced horizontal sync signal.
The separated sync signal, burst gate signal and horizontal sync signal which are generated by MC44011 are used by IC10 and IC11 to be shaped into the SYNC LOST signal, Y signal clamp pulse and U, V signal clamp pulse.
The horizontal sync signal which is reproduced by the PLL is output to the DPR-97 board by IC57 in synchronism with the clock. The vertical sync signal and field identification signals are also output to the DPR-97 board by IC58 in synchronous with the horizontal sync signal.

3-2-1-6. A/D Converter Block (schematic diagram 4/9, 5/9)

The respective analog signals which are converted to the Y, U and V signals, are passed through the low-pass filters (FL3, FL4, FL5) for the purpose of the returned anti-aliasing, video amplifier and sent to TLC5733A (IC15) where they are A/D converted (8 bits).

The TLC5733A has the clamp function internally, and the blanking level is clamped to the specified value. The clamp level is 10 H for the Y signal and 80 H for the U and V signals in terms of digital value.

The sampling frequency is 13.5 MHz for Y signal and 6.75 MHz for U and V signals. The U and V signals are multiplexed in terms of time division after A/D conversion in TLC5733A, so that they are multiplexed into a 13.5 MHz, 8-bit signal.

Because the sampling frequency is different in Y signal, and U/V signals, the low-pass filters before A/D conversion are different too. As the result, a delay is resulted between the Y signal and U/V signals. The delay is minimized by passing through the digitized Y signal only through the shift register (IC52). The respective signals are passed through CN502 and output to the DPR-97 board.

The digital values after A/D conversion conform to the ITU-R601 specification.

3-2-1-7. Sync System (Output Side) (schematic diagram 6/9)

The sync system of the output side has two modes.
One is the A/D-D/A bypass mode in which the input signal bypasses the circuit in the board. (Mainly diagnostics use) In this case, the sync and clock signals which are used by the input side sync system block, are used.
The other mode is the normal (normal operation) mode. Firstly the clock (27 MHz) is generated (X6) on free running in this board, and is input to the digital video encoder CXD1913Q (IC18) where 27 MHz is divided by two and the 13.5 MHz clock is output. Both of these clock signals are sent to the DPR-97 board and are used as the reference of all sync systems in the output side. The DPR-97 board generates the horizontal sync signal, vertical sync signal and field identification signal using this clock as the reference. These generated signal are returned to the DAD-31/31P board where the sync timing signal for the encoder IC CXD1913Q is generated (IC78, IC79, IC80, IC81) using the returned signals as the reference, and the video signal which is synchronized with the sync signal generated by the DPR-97 board, is input from DPR-97 board.
The output side has the IC µPD65641-188 (IC83) which generates menu display data. This IC is locked to the input side sync system in the A/D-D/A bypass mode, and is locked to the output side sync system in the normal operation mode, in synchronous with the sync system of the output video signal.

3-2-1-8. Menu Signal Generator Block (schematic diagram 8/9)

All of the menu display signals are generated by µPD65641-188 (IC83) and its associated external memory CXK581000 (IC84, IC85) which are controlled by the CPU-249 board via bus line. The output signal from these ICs is added to the output video signal from the DAD-31/31P board.
The menu signal output from µPD65641-188 are the 4-bit data for Y, U and V which are output in synchronous with the 13.5 MHz clock. Among them, the U and V signals data are thinned out to 1/2 by IC86 and multiplexed in time division into a single 4-bit signal by IC87 and IC88 so that the signals conform with the other video signal formats. The Y signal is shifted by IC89 in order to match the delay. The respective 4-bit signals are added into the video signal as the upper 4 bits of the 8-bit signal at the selectors (IC64 to IC71) of the video signal. The YS signal which generates the timing for multiplexing the menu signal is shifted by IC88 to match the delay with the Y and U/V signals, and is output to IC103 which controls the output signal selectors (IC64 to IC71).

3-2-1-9. Encoder and D/A Converter Block (schematic diagram 6/9)

Video encoding and D/A conversion are performed by CXD1913Q (IC18).
The four signals of the input signal from the DPR-97 board, the input signal from A/D converter, the blanking black level and menu signal, are input to the selectors (IC64 to IC71) as the 8-bit digital video signal of Y and U/V data. The signal which is selected at the selectors (IC64 to IC71) and multiplexed, is input to CXD1913Q (IC18). This selector is controlled by IC103 (Programmable Logic Device) to which the I/O (IC102) output, the menu YS signal and blanking signal are input and decoded. 27 MHz signal is input as the clock signal for the video encoder IC. The horizontal, vertical sync signals and the field identification signal which are generated by the DPR-97 board, are input as the sync signal so that encoding is performed.
Parameter setting such as output signal format and field polarity and others are performed by CXP5068H-242Q (IC19) using the serial interface.
The digitally encoded signal is converted to analog Y and C signals by the D/A converter, and output.

3-2-1-10. Video Signal Output Block (schematic diagram 7/9)

The D/A converted Y and C signals are passed through the low-pass filters for anti-aliasing. Both low-pass filters have the same characteristics.
The respective signals are output to external devices as the MONITOR OUT, through video amplifier, 75 Ω driver, etc. At the same time, both signals are mixed and the composite signal is generated. The composite signal is output to external devices as the AUX OUT, through video amplifier, 75 Ω driver, etc. All circuit consists of transistor discrete circuit. (Q111 to Q138 and peripherals)

3-2-1-11. Decoder and Encoder Control Block (schematic diagram 6/9)

The video decoder (MC44011) and the video encoder (CXD1913Q) are controlled (setting the internal parameters) by the 4-bit microprocessor CXP5068H-242Q (IC19). Among the terminals of this IC, the ports which are used by the internal software are described as follows.

NAME	PIN	I/O	FUNCTION
PA0	60	I	Selection of encoder IC H: CXD1910Q, L: CXD1913Q
PB0	64	I	Setting of V sync delay of decoder IC in NTSC H: 68us, L: 36us
PB1	1	I	Setting of V sync delay of decoder IC in PAL H: 36us, L: 68us
PB2	2	I	Setting of blanking period of encoder IC H: All input data is passed through. L: The input data is ignored at blanking period and black level is generated. Alternately, amplitude exceeding Y: 10H to EBH, UV: 10H to F0H are limited even outside the blanking period
PB3	3	I	Setting of chroma phase adjustment mode inside the decoder IC H: Phase is adjusted by HUE of the decoder block. L: Phase is adjusted by the subcarrier balance of the chroma PLL block.
PC0	12	I	Chroma phase adjustment input for decoder PC0: LSB, PC3: MSB
PC1	13	I	
PC2	14	I	
PC3	15	I	
PD0	16	O	Encoder serial interface: data output
PD1	17	O	Encoder serial interface: data clock output
PD2	18	O	Encoder serial interface: chip-select output
PE0	4	I	V SYNC INPUT ACTIVE LOW
PE1	5	I	H: NTSC, L: PAL
PE2	6	I	VCO inside the decoder IC oscillation ON/OFF, H: ON, L: OFF
PE3	7	I	D/A converter output of encoder IC ON/OFF, H: ON, L: OFF (BLANKING)

3-2-1-12. CPU Interface (schematic diagram 9/9)

The CPU interface accesses the menu display IC μPD65641GD-188 (IC83) and the parallel I/O IC μPD71055 (IC102). Address bus is input through the buffers (IC91, IC92, IC93). The data bus is input and output using latches (IC95, IC96, IC97 and IC98). The bit width of data is 16-bit for the menu display IC, and 8-bit for the parallel I/O IC. Input/output control of the data latch and address decode of the menu IC are performed by IC99 (Programmable Logic Device).

3-2-1-13. Parallel I/O (schematic diagram 9/9)

The CPU board reads and sets the status of the DAD-31/31P board through the CPU interface using the parallel I/O IC μPD71055 (IC102). The items which can be set and read, are shown below.

- Input switching of DAD-31/31P board
- Setting the mode in which the output signal of the DAD-31/31P board is returned to input for bypass.
- Blanking the input and output signals of the DAD-31/31P
- Setting the A/D-D/A bypass mode of the DAD-31/31P
- Reading if any signal is input to the DAD-31/31P board or not

Actual I/O address, description of each bit are shown as follows.
Name of each bit of the I/O corresponds to the name of each bit which controls the selector shown in Fig. 3-2-1.

DAD-31/31P Board I/O Map Table

Address: 2A0H (DAD31/31P CNT)
DAD31/31P Control
IC102 μPD71055 port 0

Bit	R/W	Signal	Description
0	R/W	IM SEL1	(SEL2, SEL1): Select Video Source
1	R/W	IM SEL2	(0, 0): CAMUNIT; (0, 1): AUX1; (1, 0): Not Use; (1, 1); AUX2
2	R/W	Not Use	
3	R/W	Not Use	
4	R/W	SET OMBYP	0: Bypass Video OUT to Video IN; 1: Normal
5	R/W	Not Use	
6	R/W	SET MBLK	0: Video OUT Blanking; 1: Normal
7	R/W	SET IMBYP	0: Set AD to DA Bypass; 1: Normal

Address: 2A2H (Menu Reset)
Menu Reset
IC102 μPD71055 port 1

Bit	R/W	Signal	Description
0	R/W	MO RESET	Reset Menu Gen. IC 1: Reset
1	R/W	Not Use	
2	R/W	Not Use	
3	R/W	Not Use	
4	R/W	Not Use	
5	R/W	Not Use	
6	R/W	Not Use	
7	R/W	Not Use	

Address: 2A4H (DAD31/31P STS)

DAD31/31P Status

IC102 μPD71055 port 2

Bit	R/W	Signal	Description
0	R	NTSC/PAL	0: PAL Mode; 1: NTSC Mode
1	R	MSYNC LOST	0: No Video Input
2	R	Not Use	
3	R	Not Use	
4	R	Not Use	
5	R	Not Use	
6	R	Not Use	
7	R	Not Use	

Address: 2A6H (PIO CNT)

PIO Mode Control

IC102 μPD71055 Command REG

Set 1000 000lb (81H)

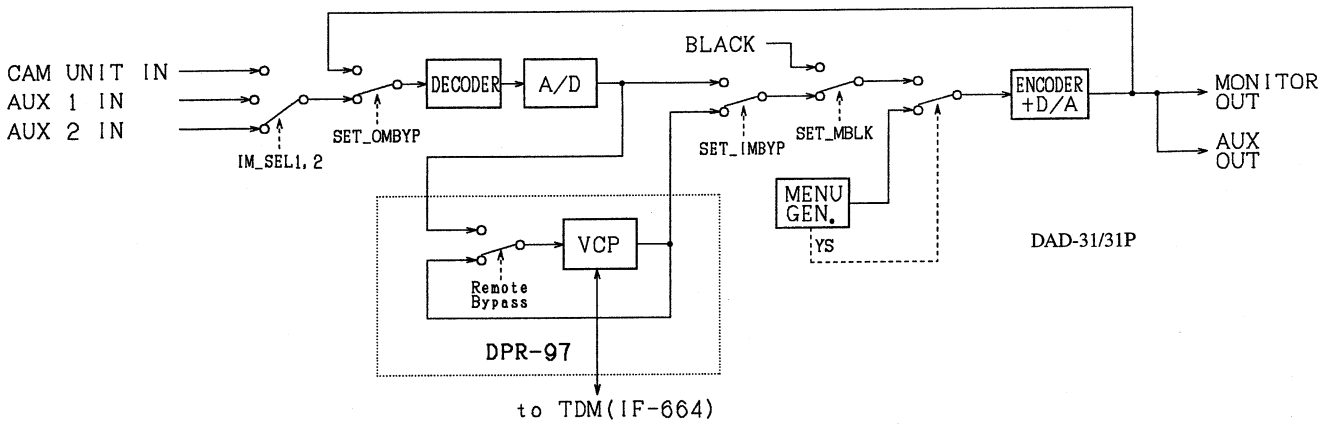


Fig. 3-2-1 PCS-P300/P300P Video Signal Flow (with control bit)

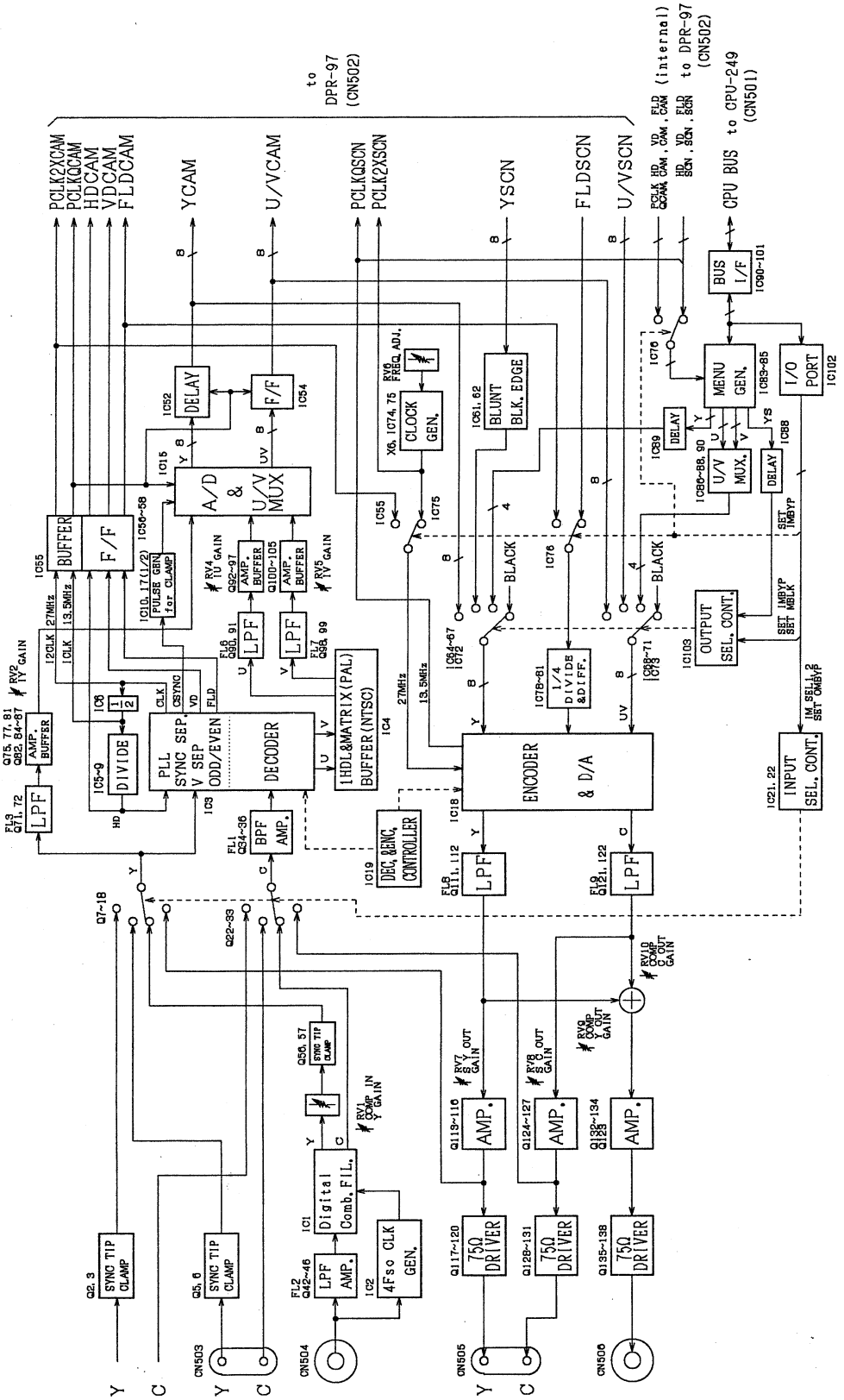


Fig. 3-2-2 DAD-31/31P Board Block Diagram

3-2-2. DAD-31/31P Board Troubleshooting

[Equipment required]

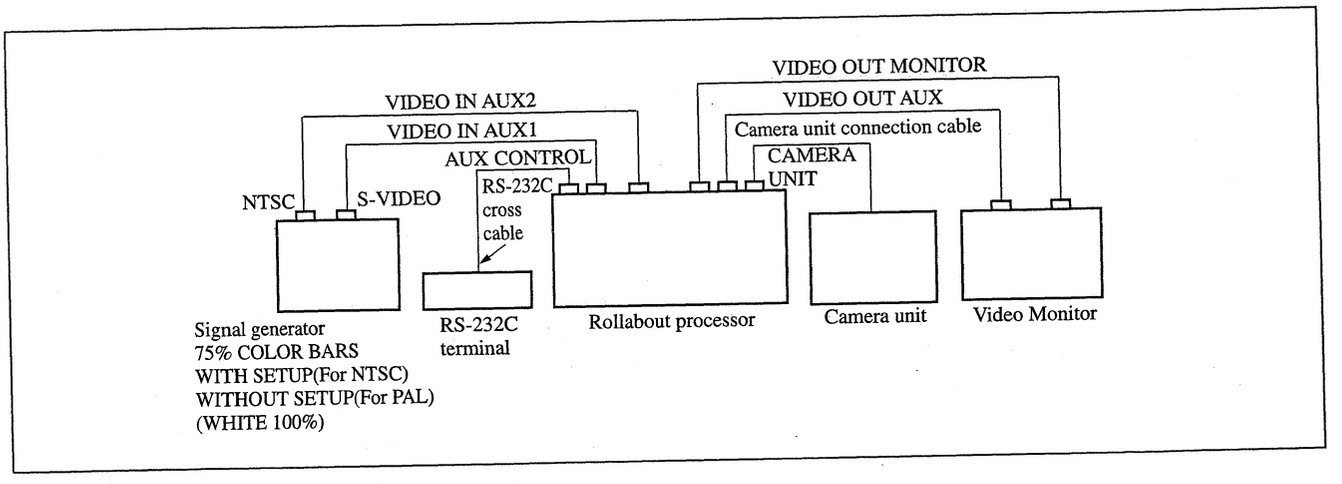
- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Remote commander (PCS-R500))
- Signal generator (Tektronix TSG130A for NTSC, TSG131A for PAL or equivalent)
- Oscilloscope
- Video monitor
- Camera unit connection cable (supplied accessory)

[Service tools]

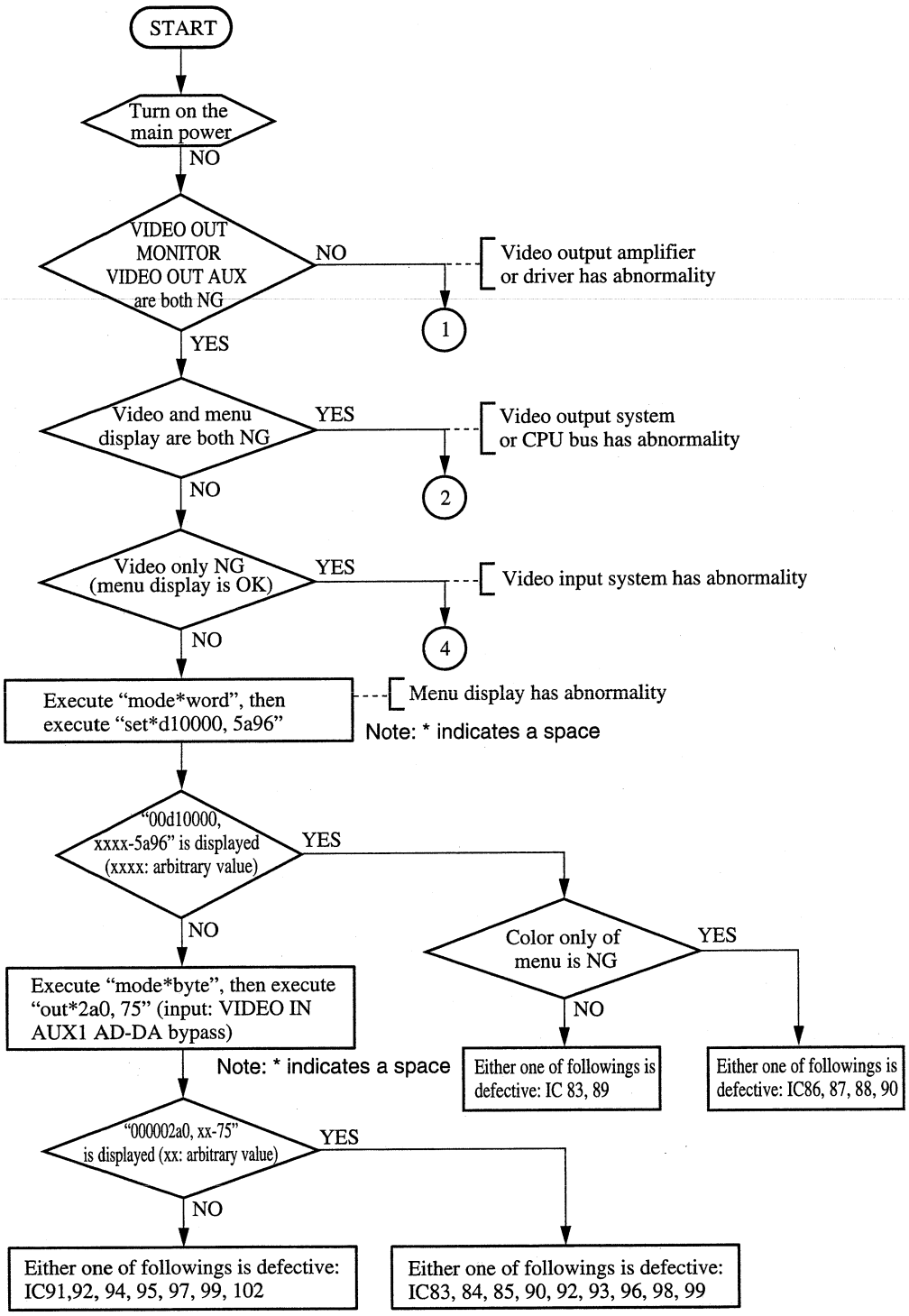
- VH-962 extension board (Sony part number: J-6389-620-A)
- RS-232C terminal (PC/AT compatible machine with communication software "CCT")
- RS-232C cross cable
- Pin-BNC video cable
- S cable

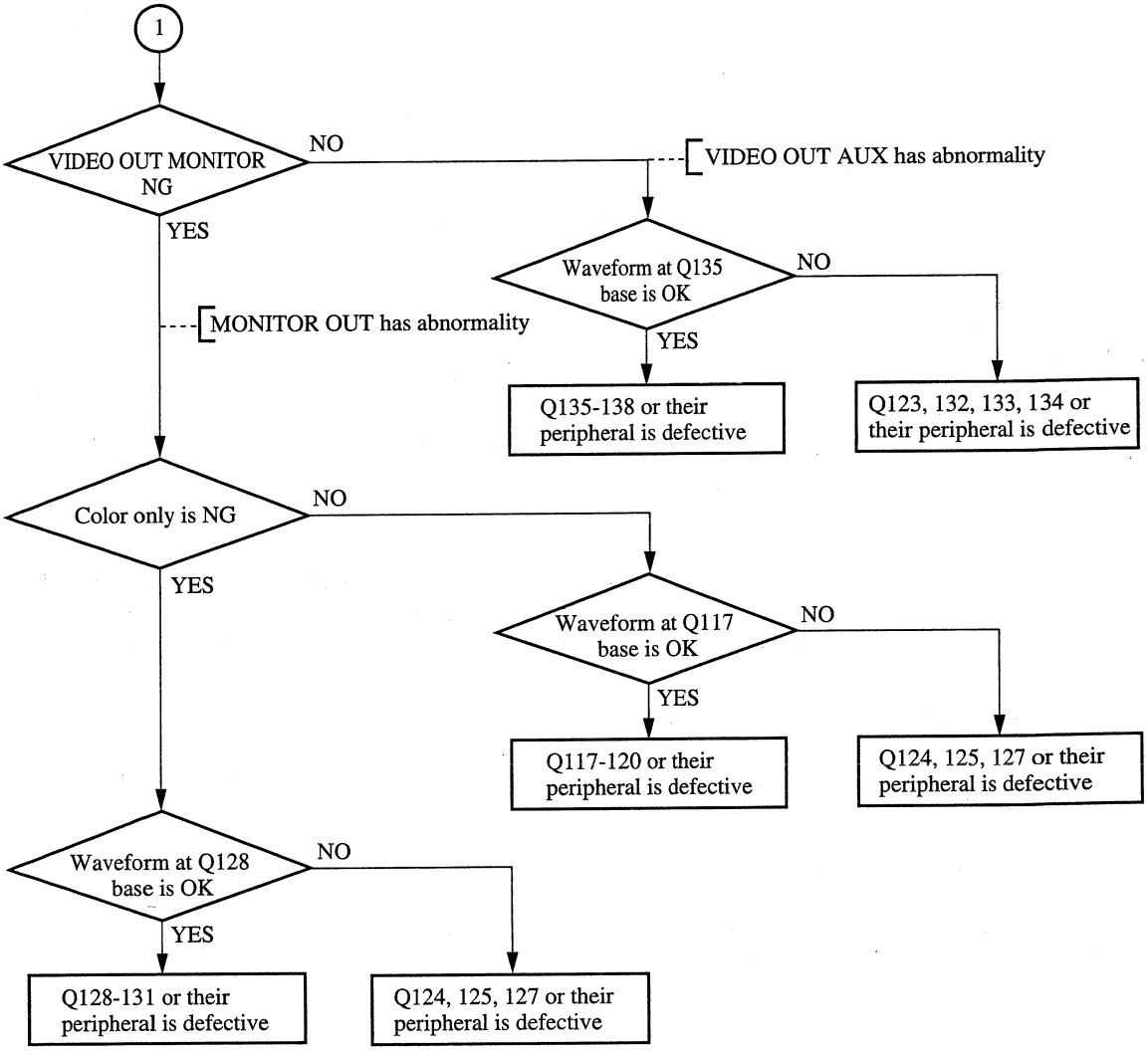
[Preparation]

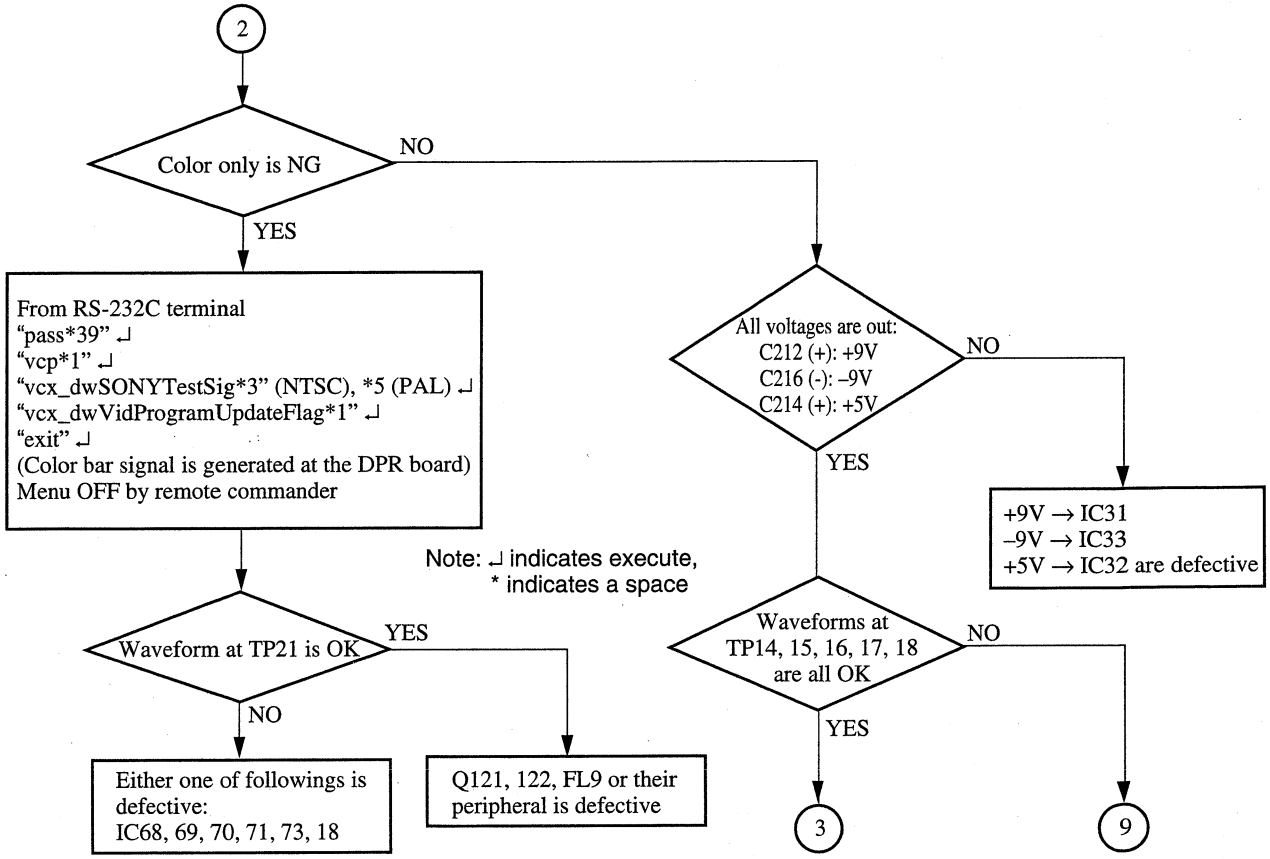
1) Set up the PCS-3000/3000P system to the normal operating condition.
2) Insert the extension board to the slot of the DAD-31/31P board.
3) Insert the DAD-31/31P board to the extension board.
4) Make connection as shown below.
5) Start up the communication software "CCT" which is installed in the terminal. Turn on the main power of the PCS-3000/3000P system (enter the debug mode).
6) Turn on the main power from the remote commander (PCS-R500).

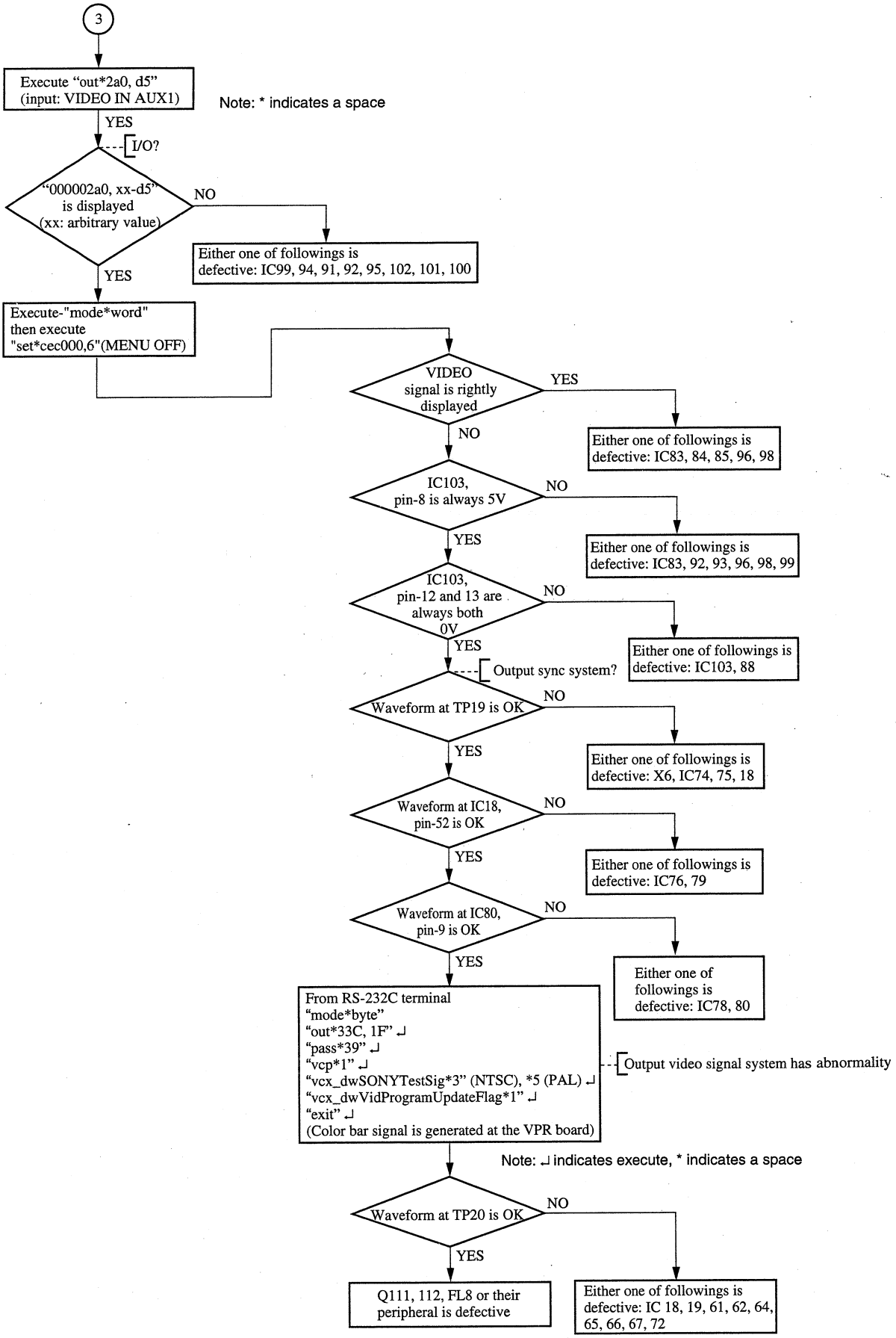


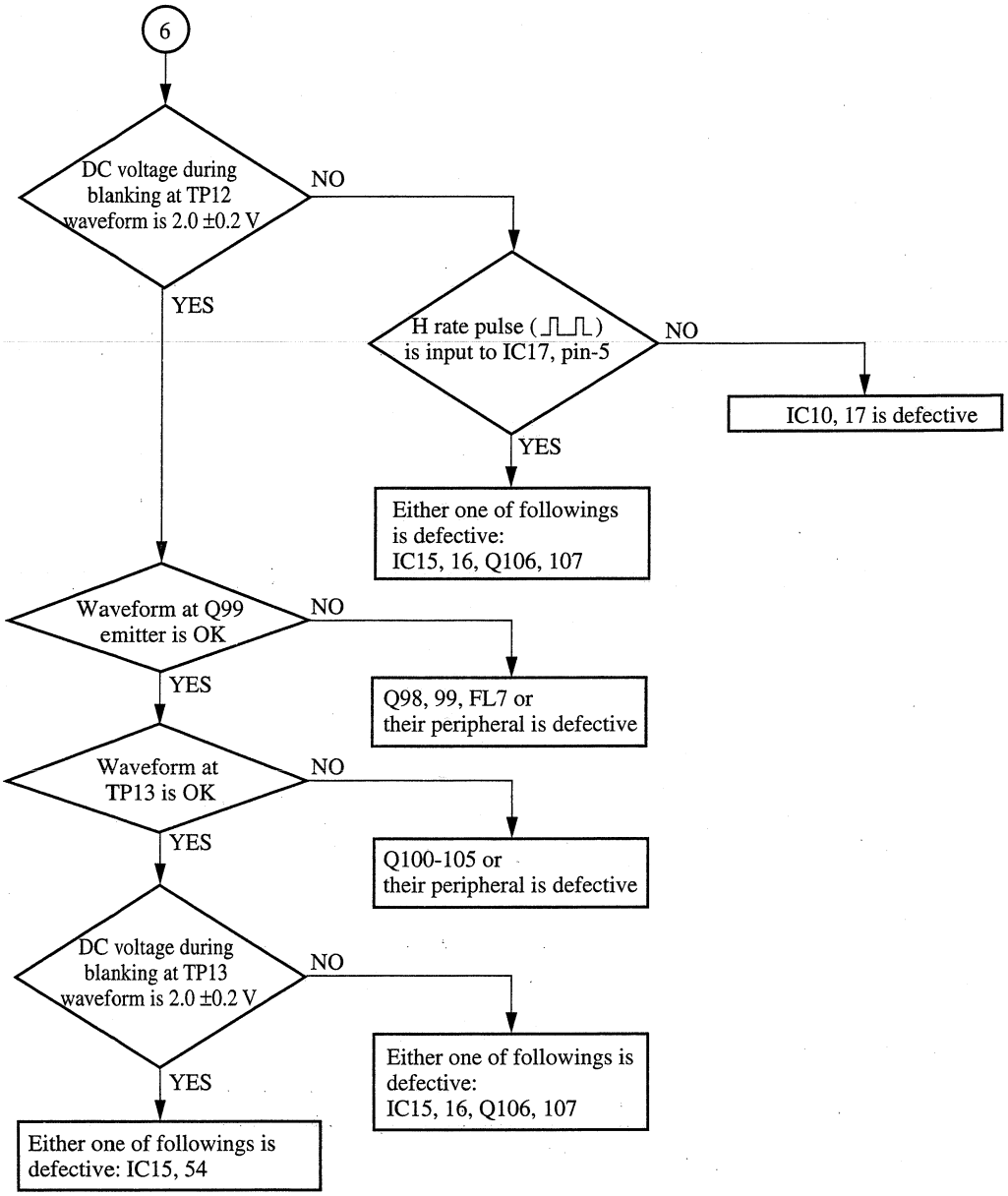
[Flowchart]

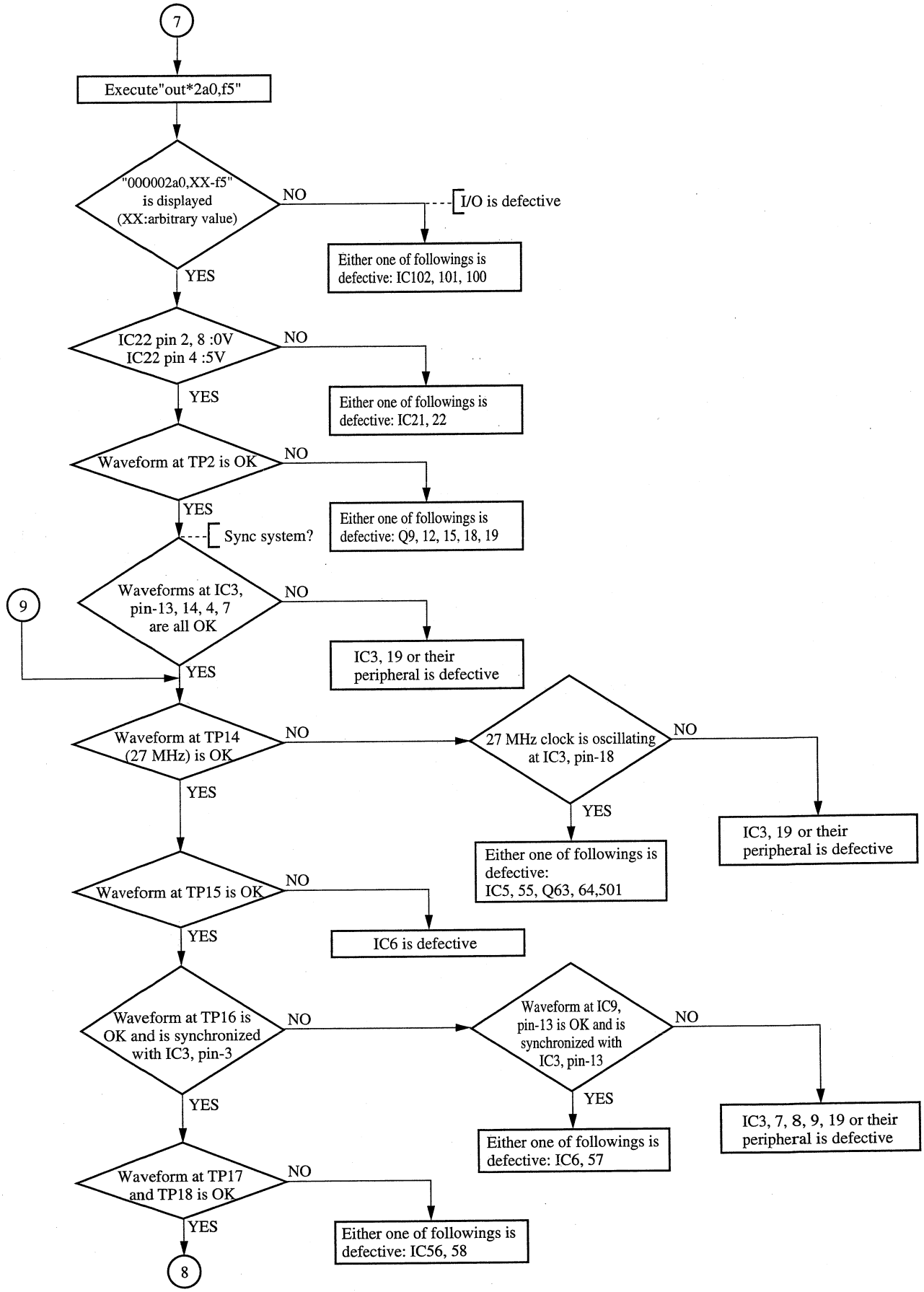

START
Turn on the main power
NO
VIDEO OUT MONITOR VIDEO OUT AUX are both NG
NO
Video output amplifier or driver has abnormality
1
YES
Video and menu display are both NG
YES
Video output system or CPU bus has abnormality
2
NO
Video only NG (menu display is OK)
YES
Video input system has abnormality
4
NO
Execute "mode*word", then execute "set*d10000, 5a96"
Menu display has abnormality
Note: * indicates a space
"00d10000, xxxx-5a96" is displayed (xxxx: arbitrary value)
YES
NO
Color only of menu is NG
YES
NO
Execute "mode*byte", then execute "out*2a0, 75" (input: VIDEO IN AUX1 AD-DA bypass)
Note: * indicates a space
Either one of followings is defective: IC 83, 89
Either one of followings is defective: IC86, 87, 88, 90
"000002a0, xx-75" is displayed (xx: arbitrary value)
YES
NO
Either one of followings is defective: IC91,92, 94, 95, 97, 99, 102
Either one of followings is defective: IC83, 84, 85, 90, 92, 93, 96, 98, 99

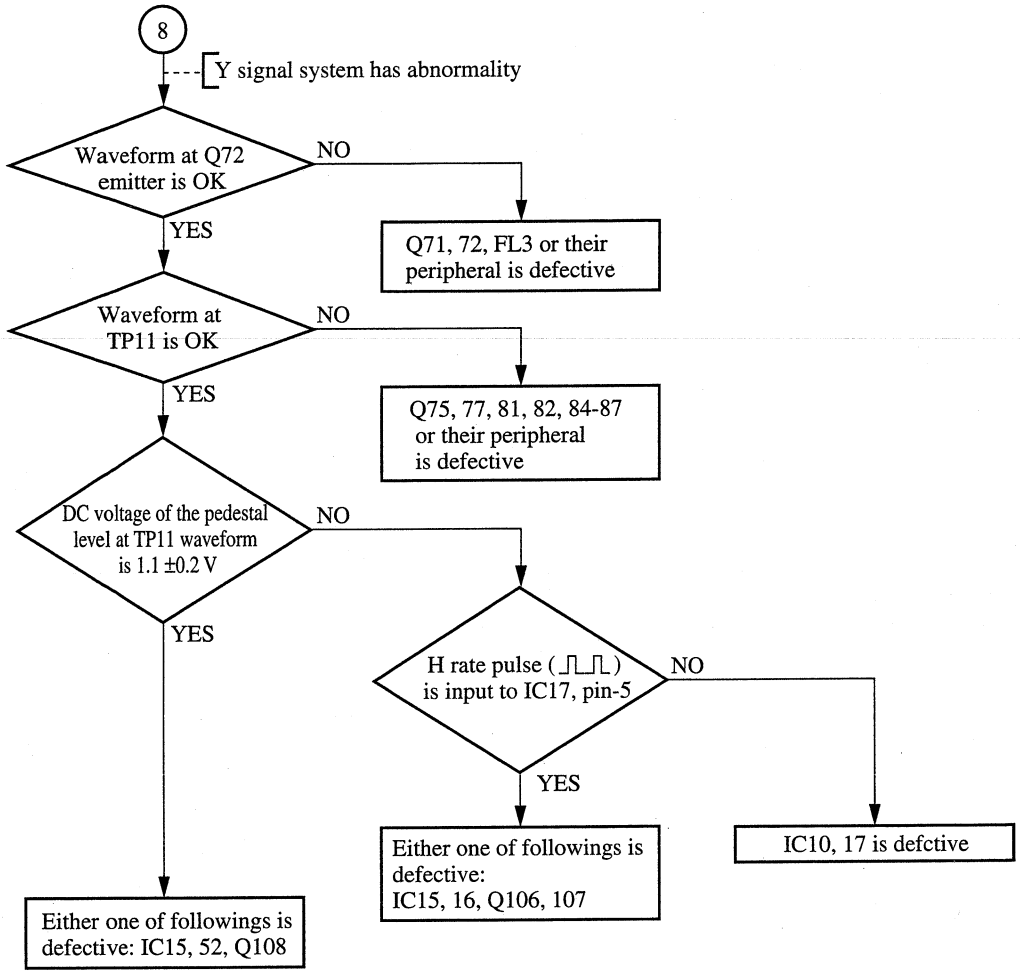

1
VIDEO OUT MONITOR NG
NO
VIDEO OUT AUX has abnormality
YES
Waveform at Q135 base is OK
NO
MONITOR OUT has abnormality
YES
Q135-138 or their peripheral is defective
Q123, 132, 133, 134 or their peripheral is defective
Color only is NG
NO
YES
Waveform at Q117 base is OK
NO
YES
Q117-120 or their peripheral is defective
Q124, 125, 127 or their peripheral is defective
Waveform at Q128 base is OK
NO
YES
Q128-131 or their peripheral is defective
Q124, 125, 127 or their peripheral is defective


2
Color only is NG
NO
YES
From RS-232C terminal
"pass*39" ↵
"vcp*1" ↵
"vcx_dwSONYTestSig*3" (NTSC), *5 (PAL) ↵
"vcx_dwVidProgramUpdateFlag*1" ↵
"exit" ↵
(Color bar signal is generated at the DPR board)
Menu OFF by remote commander
All voltages are out:
C212 (+): +9V
C216 (-): –9V
C214 (+): +5V
NO
YES
+9V → IC31
–9V → IC33
+5V → IC32 are defective
Note: ↵ indicates execute,
* indicates a space
Waveform at TP21 is OK
YES
NO
Either one of followings is defective:
IC68, 69, 70, 71, 73, 18
Q121, 122, FL9 or their peripheral is defective
Waveforms at TP14, 15, 16, 17, 18 are all OK
NO
YES
3
9


3
Execute "out*2a0, d5"
(input: VIDEO IN AUX1)
Note: * indicates a space
YES
I/O?
"000002a0, xx-d5"
is displayed
(xx: arbitrary value)
NO
Either one of followings is
defective: IC99, 94, 91, 92, 95, 102, 101, 100
YES
Execute-"mode*word"
then execute
"set*cec000,6"(MENU OFF)
VIDEO
signal is rightly
displayed
YES
Either one of followings is
defective: IC83, 84, 85, 96, 98
NO
IC103,
pin-8 is always 5V
NO
Either one of followings is
defective: IC83, 92, 93, 96, 98, 99
YES
IC103,
pin-12 and 13 are
always both
0V
NO
Either one of followings is
defective: IC103, 88
YES
Output sync system?
Waveform at TP19 is OK
NO
Either one of followings is
defective: X6, IC74, 75, 18
YES
Waveform at IC18,
pin-52 is OK
NO
Either one of followings is
defective: IC76, 79
YES
Waveform at IC80,
pin-9 is OK
NO
Either one of
followings is
defective: IC78, 80
YES
From RS-232C terminal
"mode*byte"
"out*33C, 1F" ↵
"pass*39" ↵
"vcp*1" ↵
"vcx_dwSONYTestSig*3" (NTSC), *5 (PAL) ↵
"vcx_dwVidProgramUpdateFlag*1" ↵
"exit" ↵
(Color bar signal is generated at the VPR board)
Output video signal system has abnormality
Note: ↵ indicates execute, * indicates a space
Waveform at TP20 is OK
NO
YES
Q111, 112, FL8 or their
peripheral is defective
Either one of followings is
defective: IC 18, 19, 61, 62, 64,
65, 66, 67, 72


6
DC voltage during blanking at TP12 waveform is 2.0 ±0.2 V
NO
YES
H rate pulse (⎍⎍⎍) is input to IC17, pin-5
NO
IC10, 17 is defective
YES
Either one of followings is defective: IC15, 16, Q106, 107
Waveform at Q99 emitter is OK
NO
Q98, 99, FL7 or their peripheral is defective
YES
Waveform at TP13 is OK
NO
Q100-105 or their peripheral is defective
YES
DC voltage during blanking at TP13 waveform is 2.0 ±0.2 V
NO
Either one of followings is defective: IC15, 16, Q106, 107
YES
Either one of followings is defective: IC15, 54


7
Execute"out*2a0,f5"
"000002a0,XX-f5" is displayed (XX:arbitrary value)
NO
I/O is defective
Either one of followings is defective: IC102, 101, 100
YES
IC22 pin 2, 8 :0V IC22 pin 4 :5V
NO
Either one of followings is defective: IC21, 22
YES
Waveform at TP2 is OK
NO
Either one of followings is defective: Q9, 12, 15, 18, 19
YES
Sync system?
9
Waveforms at IC3, pin-13, 14, 4, 7 are all OK
NO
IC3, 19 or their peripheral is defective
YES
Waveform at TP14 (27 MHz) is OK
NO
27 MHz clock is oscillating at IC3, pin-18
NO
IC3, 19 or their peripheral is defective
YES
Either one of followings is defective: IC5, 55, Q63, 64,501
YES
Waveform at TP15 is OK
NO
IC6 is defective
YES
Waveform at TP16 is OK and is synchronized with IC3, pin-3
NO
Waveform at IC9, pin-13 is OK and is synchronized with IC3, pin-13
NO
IC3, 7, 8, 9, 19 or their peripheral is defective
YES
Either one of followings is defective: IC6, 57
YES
Waveform at TP17 and TP18 is OK
NO
Either one of followings is defective: IC56, 58
YES
8


8
Y signal system has abnormality
Waveform at Q72 emitter is OK
NO
YES
Q71, 72, FL3 or their peripheral is defective
Waveform at TP11 is OK
NO
YES
Q75, 77, 81, 82, 84-87 or their peripheral is defective
DC voltage of the pedestal level at TP11 waveform is 1.1 ±0.2 V
NO
YES
H rate pulse (⎍⎍⎍) is input to IC17, pin-5
NO
YES
Either one of followings is defective: IC15, 16, Q106, 107
IC10, 17 is defctive
Either one of followings is defective: IC15, 52, Q108

3-3. DPR-97 BOARD

3-3-1. Outline of DPR-97 Board Operation

3-3-1-1. Outline

DPR-97 board has the functions of acoustic echo cancelling, compression (encode) and decompression (decode) of audio data (G.711, G722 and G.728), compression (encode) and decompression (decode) of video data (H.261), and multiplexing and demultiplexing of various data (H.221).
Function blocks inside DPR-97 board and connection with other boards are shown Fig. 3-3-1.
As shown in Fig. 3-3-1, the video data input from DAD-31/31P board is compressed, encoded, multiplexed with other data (includes audio data) and sent to the IF-664 board. The audio signal input from MIC or LINE-IN terminal is converted to digital signal, used for the process of echo cancelling, compressed, and multiplexed with encoded video data and other data.
The received data from IF-664 board is demultiplexed to video, audio and other data. The video data is decoded and sent to DAD-31/31P board. The audio data is decoded, processed for echo cancelling and converted to analog signal.
The other demultiplexed data is sent to CPU-249 board via host bus interface.
These all functions are divided into two major blocks, Audio block and VCP block.
The following description is written each major block.

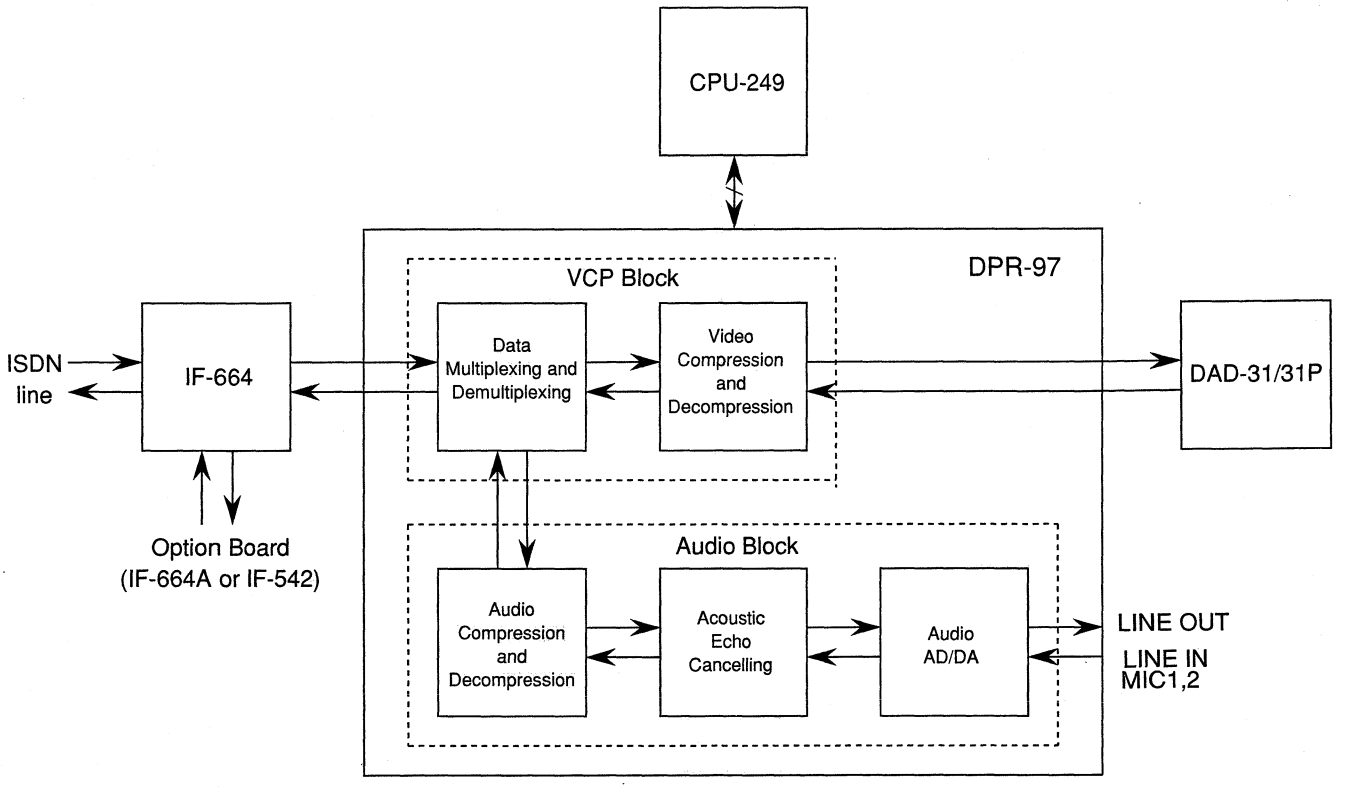


Fig. 3-3-1. Function Blocks and Connection with Other Boards of DPR-97 Board

3-3-1-2. Outline of VCP Block Operation

The VCP block performs multiplexing and demultiplexing of various data (H.221), and compression (encode) and decompression (decode) of video data (H.261).
The VCP block consists of the following groups.

1. VCP and Memories

The H.221 and H.261 function are performed by the VCP chip according to software code which is downloaded from CPU-249 board via the host interface. The software code is stored into four 1Mbit-SRAMs. These SRAMs are used to preserve the H.221 data for it's process and syncronizing all network channels. The video data which are processed by the H.261 function are preserved two 16Mbit-DRAMs.

The interface to IF-664 board is a syncronous serial port, it's named TDM-interface. The interface for audio data is also a syncronous serial port. The video data are sent and received via two pair of parallel ports. These ports are input and output ports, and each ports consist of two 8bit-port for Y-signal and UV-signal.

The host interface is used for setting and reading the internal port, downloading program, and input and output of data which are processed by the H.221 function such as LSD, MLP. The interrupt is assigned at IRQ11. The DMA channel for reading from VCP is Ch.6, and for writing to VCP is Ch.5.

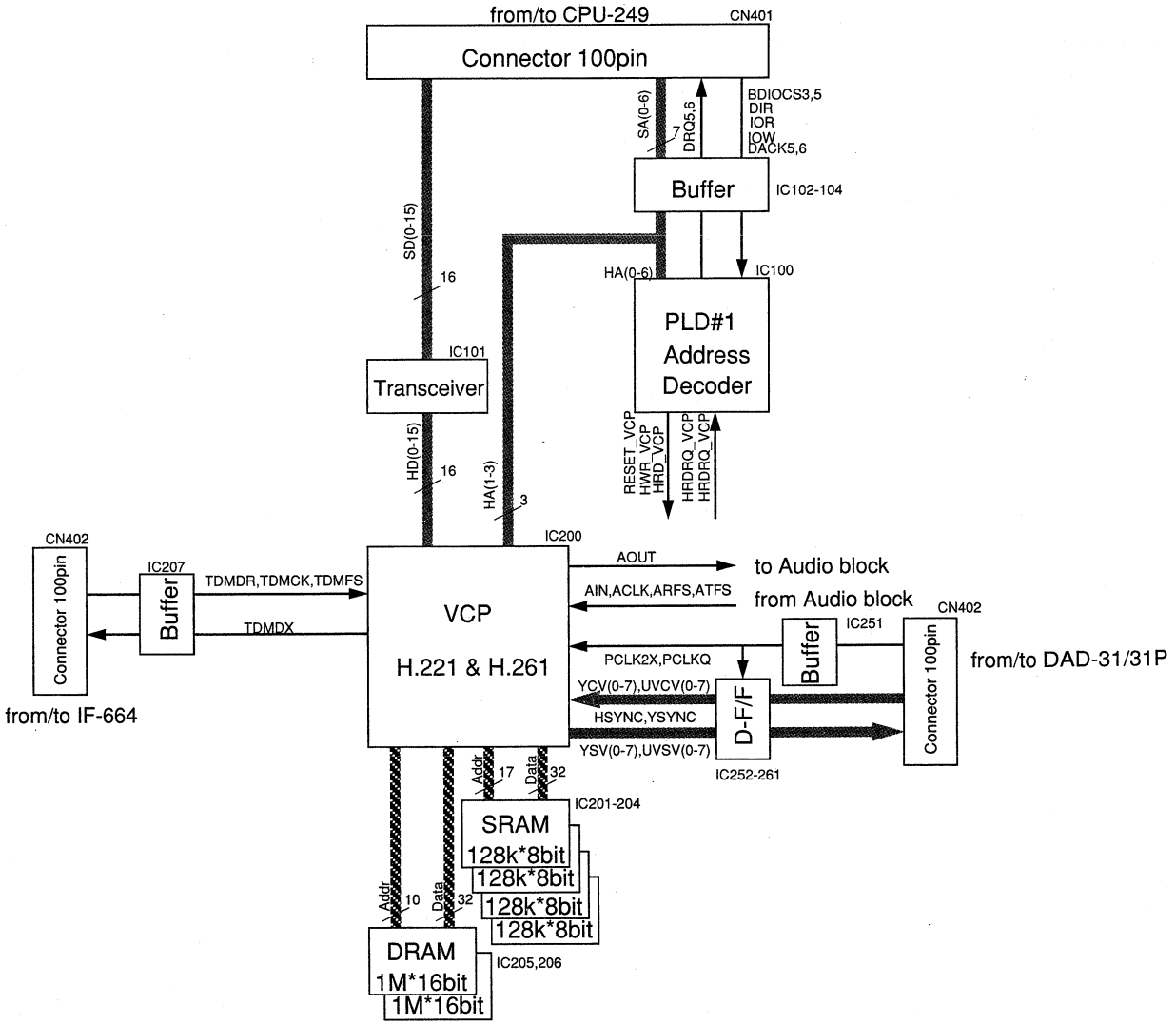


Fig. 3-3-2. Block Diagram of VCP block

2. Video Signal Timing Adjuster

This block had the function of timing adjustment of video data buses between VCP and DAD-31/31P board. These video data buses consist of pixel clock, sync, 8bit-Y and 8bit-UV signals. The signals input to VCP are named CAM (Camera), and output from VCP are named SCN (Screen). Both of pixel clocks are output from DAD-31/31P board. The other CAM-signals are output from DAD-31/31P board, and SCN-signals are output from VCP. All signals of each direction are sincronized with each pixel clock, and the pixel clocks are used for latching many signals in this block.

The loopback circuits for returning the SCN-signals to the CAM-signals are included in this block.

3. CPU interface

This is the bus interface with CPU-249 board. This block consists of data-bus transceiver, buffers, address, decoder and DMA-cycle control signal generator, and so on. All fuctional circuits are written into the PLD (IC100). The reset signal for VCP is also generated by IC100. The selector (IC103) is used to fix HA1-4 to '0' for accessing the DMA-port of VCP during the DMA cycle.

I/O-map VCP-block

I/O Address	Read/Write	Function
310h	R/W	HostDmaPort of VCP
312h	R/W	HostVcxPort of VCP
314h	R/W	HostDbgPort of VCP
316h	R/W	HostCtrl of VCP
318h	R/W	HostMask of VCP
31ah	Read	HostIrqStat of VCP
31ch	Write	Video Loopback: Write "01h" to set loopback, Write "00h" to clear
31eh	Write	Reset VCP: Write "01h" to reset, Write "00h" to clear resetting

3-3-1-3. Outline of Audio Block Operation

The Audio block sends and receives the audio code and code mode to and from the VCP chip, encodes and decodes the audio data, processes the audio data for echo cancelling, and performs AD/DA conversion.

Audio block is divided into the following groups.

1. Audio Codec 1 (codec for point-to-point connection)

Outline of function:

This is the point-to-point codec. It encodes (G.711, G.722 and G.728) the received signal from the echo cancellation, and sends it to the VCP chip.

The received signal from the other terminal (one point only in the case of multi-point connection mode) is picked up from the VCP chip, decoded (G.711, G.722 and G.728) by this block and sent to the multi-point connection codec (audio codec 2).

The audio delay (lip sync delay) is inserted to each of encoder and decoder as required in order to synchronize audio with video.

Main parts:

DSP#1 (IC310) : Codec processor

SRAM (IC311) : Audio memory for lip sync delay

2. Audio Codec 2 (codec for multi-point connection)

Outline of function:

This is the multiple point connection codec. The received signal from the two points is picked up from the VCP chip, decoded (G.711, G.722 and G.728), mixed with the received signal from the point-to-point codec, and sent to the acoustic echo canceling block by this block.

The audio delay (lip sync delay) is inserted to each of decoder at two points as required in order to synchronize audio with video.

The audio codec 2 performs audio detection in order to switch the video signal of the three points in the multi point connection mode.

The received signal from other terminal simply passes through the audio codec 2 in the point-to-point connection mode.

Main parts:

DSP#2 (IC320) : Codec processor

SRAM (IC321) : Audio memory for lip sync delay

3. Echo Cancellation (acoustic echo canceling block)

Outline of function:

Acoustic echo is removed from the microphone input (and LINE IN) signal, then adds or selects the input signal from the AUDIO IN (AUX) as requested by user. The signal is formulated and sent to the point-to-point codec (audio codec 1).

The received signal from the multi-point connection codec (audio codec 2) is picked up by the echo cancellation, passed through the volume control and is output to LINE OUT and the AUDIO OUT (FAR/NEAR).

Main parts:

DSP#3 (IC330) : Echo canceller

SRAM (IC331, IC332) : External memory for DSP#3 data processing

PLD#3 (IC333) : Address decoder for DSP#3 data processing

DIP switch (S330) : DSP#3 status setting.

4. AD/DA Conversion (analog/digital conversion block)

Outline of function:

This is the analog/digital signal converter, which is placed between the analog process block and the acoustic echo process block.

2 channels (microphone and LINE IN common, and AUDIO IN AUX) of A/D conversion

2 channels (LINE OUT and AUDIO OUT (FAR) common, and AUDIO OUT (NEAR)) of D/A conversion

Main parts:

ADC/DAC (IC400) : AD/DA converter

Buffer (IC354) : Analog power supply/digital power supply interface

5. CPU Interface (CPU interface block)

Outline of function:

This is common circuits to audio and VCP block.

The CPU interface block has the functions of downloading, self-diagnostics, DSP operation control (include reset operation), DSP status monitor and analog mute for the DSP#1, DSP#2, DSP#3 and their peripheral circuit for audio block.

Main parts:

PLD#1 (IC100) : Address decoder

Transceiver (IC101) : Data bus and transceiver

D-type flip flop (IC105) : Received data transfer

6. Timing Generation (serial signal timing generation block)

Outline of function:

Generation of the timing signals such as clock and sync to be used for sending and receiving the serial signals between the AD/DA, DSPs and VCP chip.

Main parts:

PLD#2 (IC370) : Timing generator

PLL (IC371) : Reference signal (8.192 MHz) generator

7. Analog Circuit (analog process block)

Outline of function:

This circuit is used for limiting the signal bandwidth to 7.0 kHz or less and performs interface between the LINE level and the ADC/DAC level.

Analog mute is performed by the control of the CPU interface block.

Main parts:

LPF (IC408, IC411, IC413) : Low-pass filter and gain amplifier for the sended signal to ADC

LPF (IC409, IC410, IC412) : Low-pass filter and gain amplifier for the received signal from DAC

All output mute (Q406, Q407 and others) : Mute circuit for all outputs

AUDIO OUT mute (Q408, Q409 and others) : Mute circuit for Aux outputs

8. Power Management (analog power supply monitoring circuit)

Outline of function:

This circuit monitors the analog power supply voltage and controls the output of the analog power supply/digital power supply interface device with the sleep signal.

And, this controls the output of the crystal oscillaotor for DSP clock.

Main parts:

IC401: IC for analog power supply monitoring

I/O-map of Audio-block

I/O Address	Read/Write	Function
180h, 182h 190h, 192h 1a0h, 1a2h	R/W	Writed data can be readed for checking I/O acccess
184h	Write	Reset DSP#1, 2: Write "00h" to reset, Write "01h" to clear resetting
1a4h	Write	Reset DSP#3: Write "00h" to reset, Write "01h" to clear resetting
1b6h	Write	Analog Mute: Write "00h" to set mute, Write "01h" to clear mute

I/O Address			Read/Write	Function
DSP#1	DSP#2	DSP#3		
180h	190h	1a0h	Write	HostData (HDT) (L)
182h	192h	1a2h	Write	HostData (HDT) (H)
188h	198h	1a8h	Read	HostData (HDT) (L)
18ah	19ah	1aah	Read	HostData (HDT) (H)
18ch	19ch	1ach	Read	HostStatus (HST)(L)
18eh	19eh	1aeh	Read	HostStatus (HST) (H)

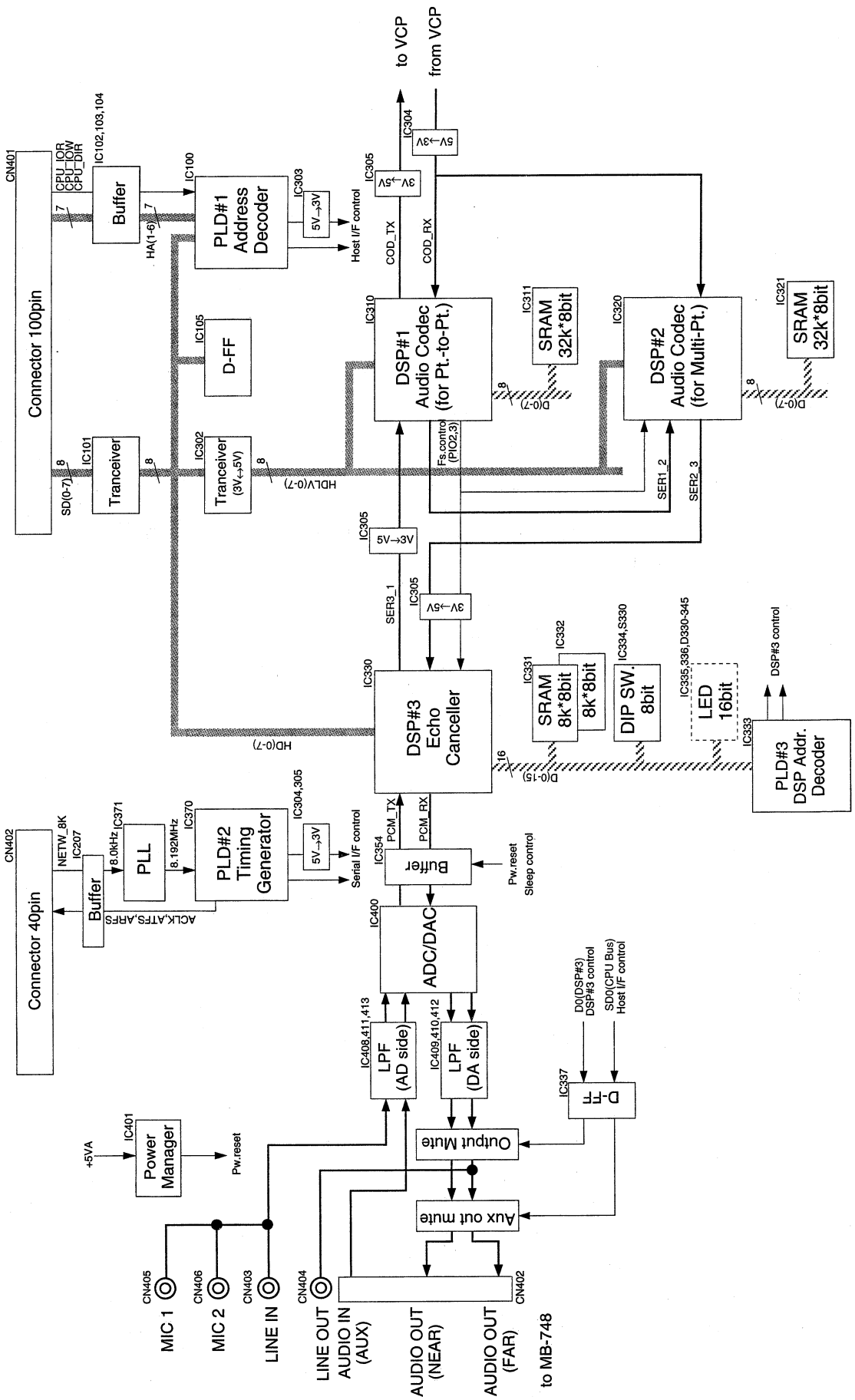


Fig. 3-3-3. Block Diagram of Audio-block

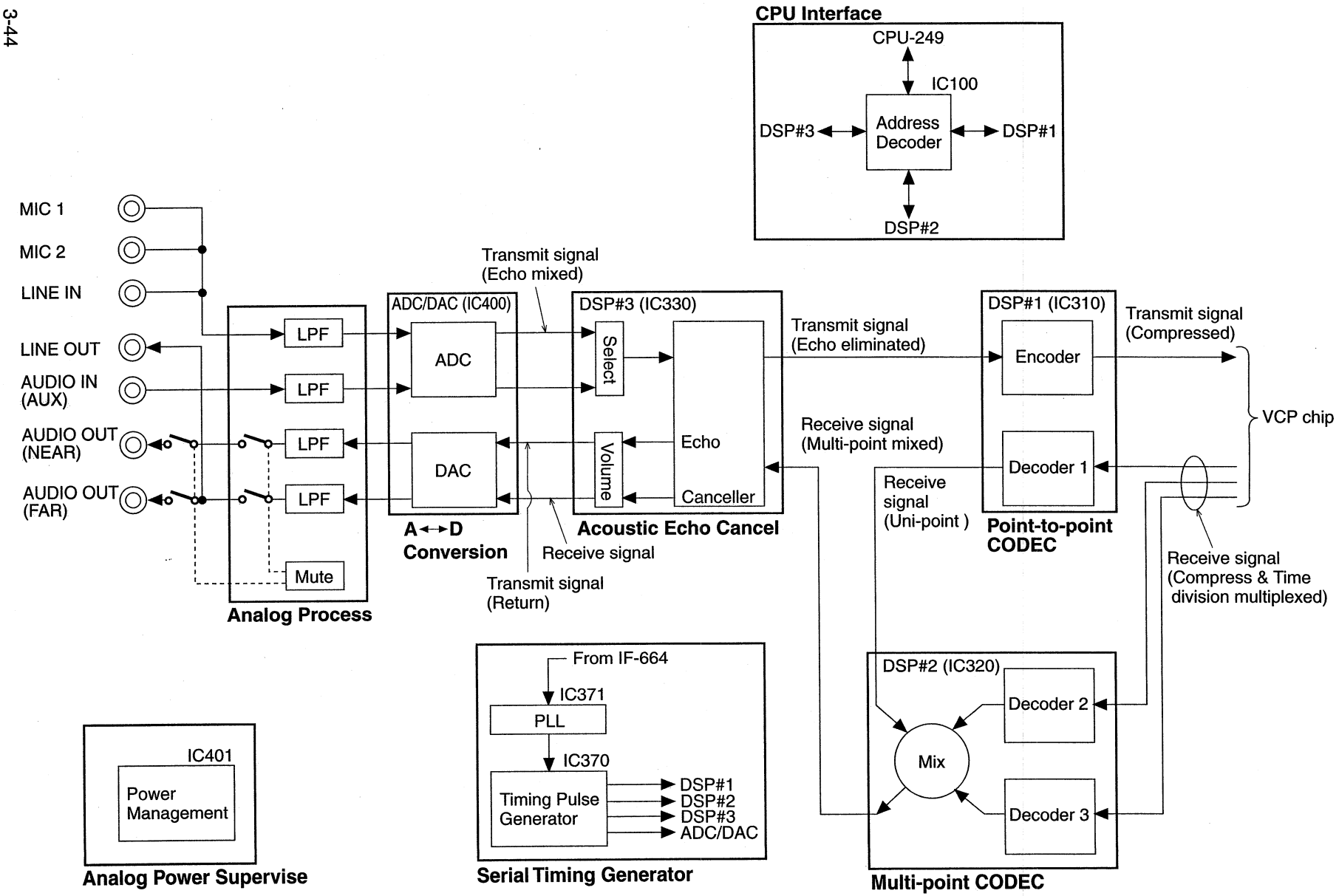


Fig. 3-3-4. Audio Block Signal Flow

3-3-2. DPR-97 board Troubleshooting

When an error occurs in the DPR-97 board, use the flow chart as shown to locate the cause of trouble.

[Equipment required]

- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Remote commander (PCS-R500))
- Oscilloscope
- Video monitor
- Camera unit connection cable (supplied accessory)

[Service tools]

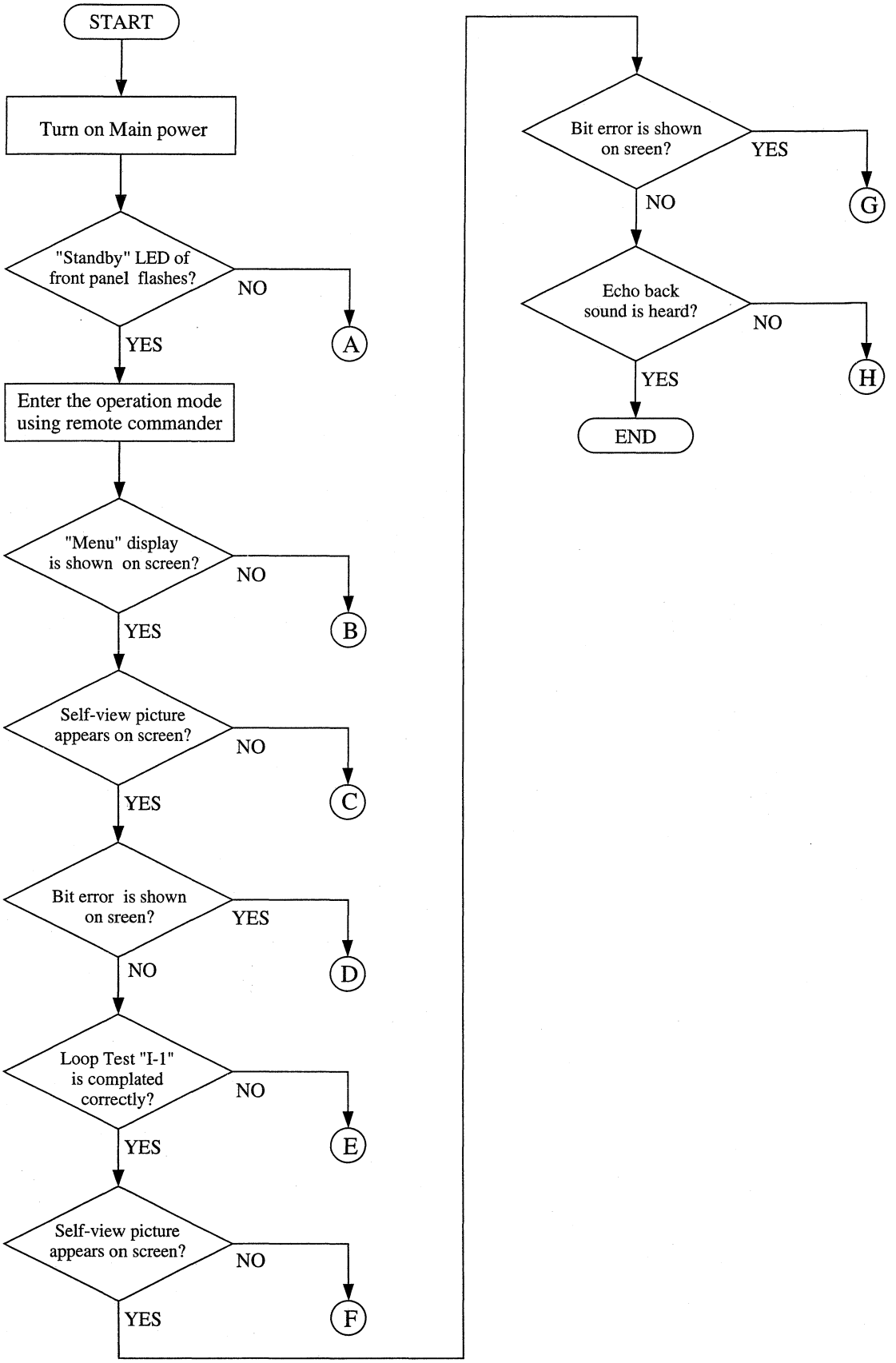
- Extension board (Sony part number: J-6389-620-A)
- RS-232C terminal (PC/AT compatible machine with communication software "CCT")
- RS-232C cross cable
- Pin plug cord
- S cable

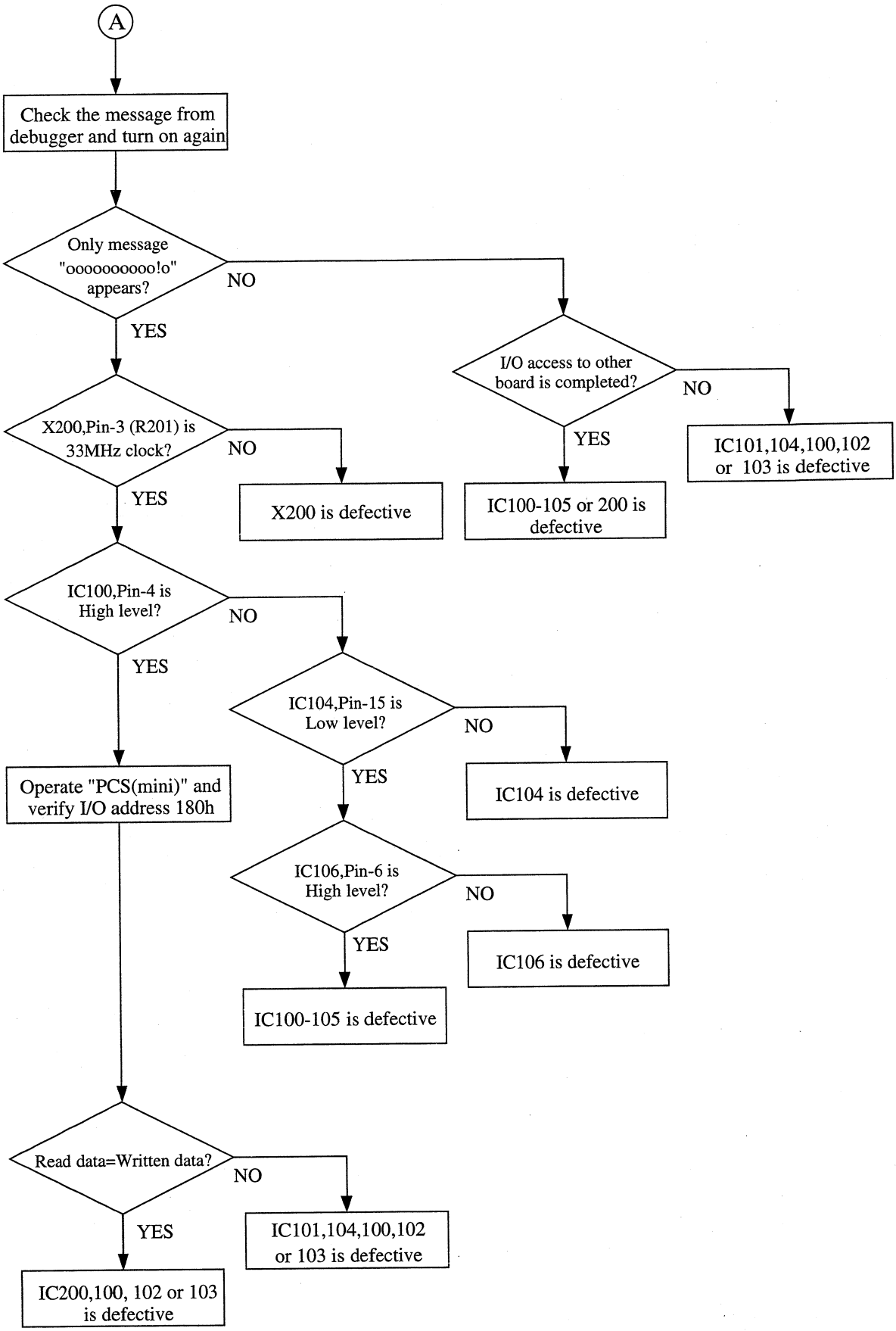
[Preparation]

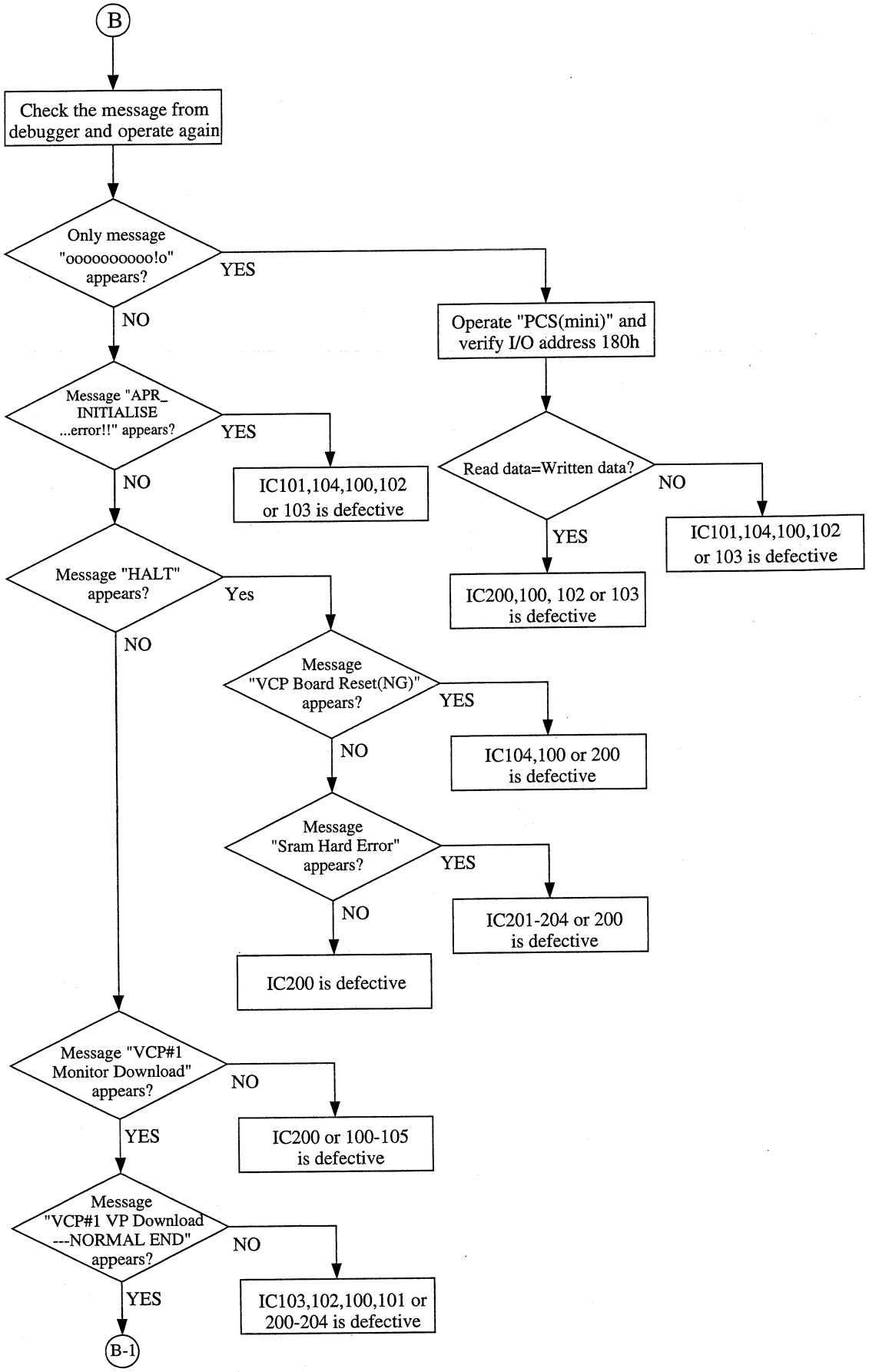
1) Set up the PCS-3000/3000P system to the normal operating condition.
2) Insert the extension board to the slot of DPR-97 board.
3) Insert the DPR-97 board to the extension board.
4) Connect the RS-232C terminal (to be abbreviated simply as terminal hereafter) to the AUX CONTROL terminal of the rollabout processor (PCS-P300/P300P).
5) Start up the communication software "CCT" which is installed in the terminal. Turn on the main power of the PCS-3000/3000P system (enter the debug mode).
6) Turn on the main power from the remote commander (PCS-R500).

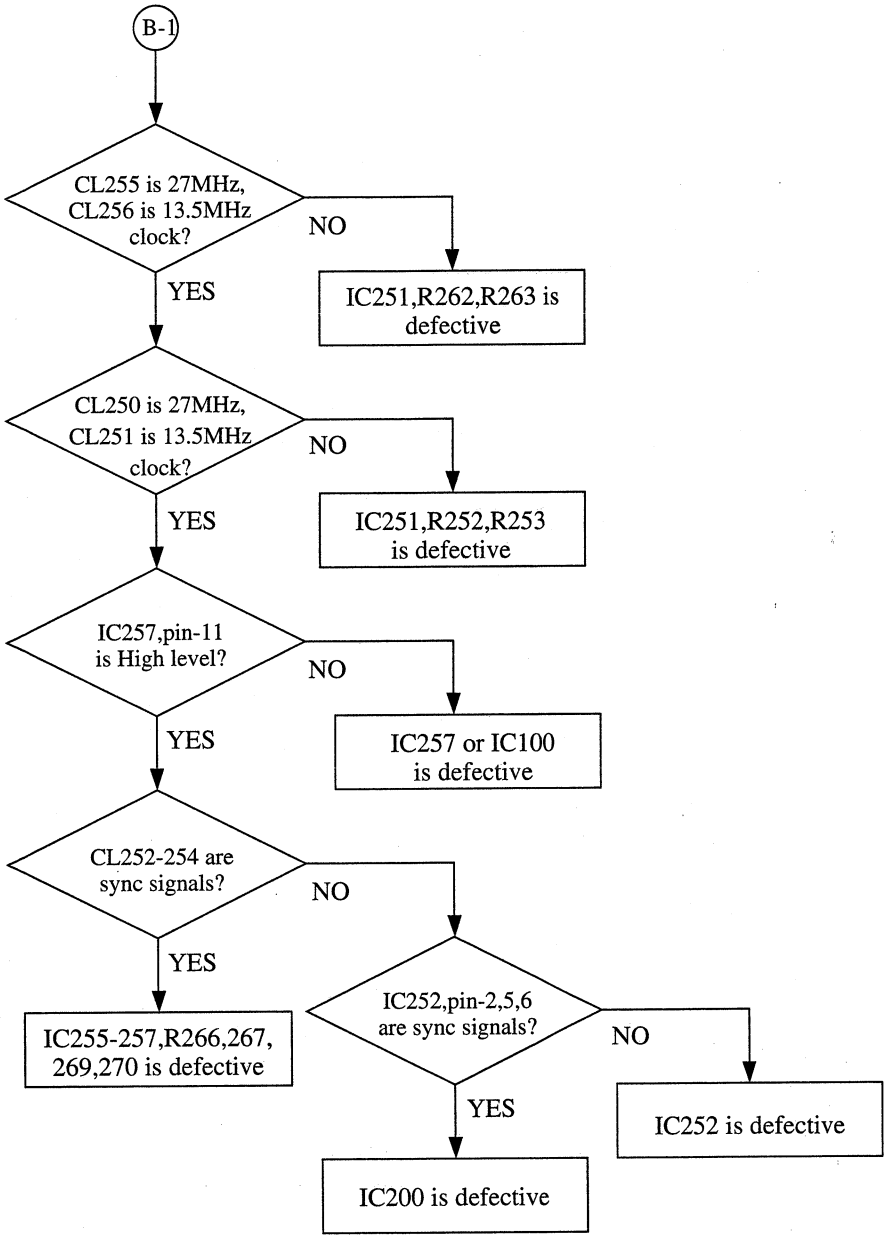
[Flowchart]

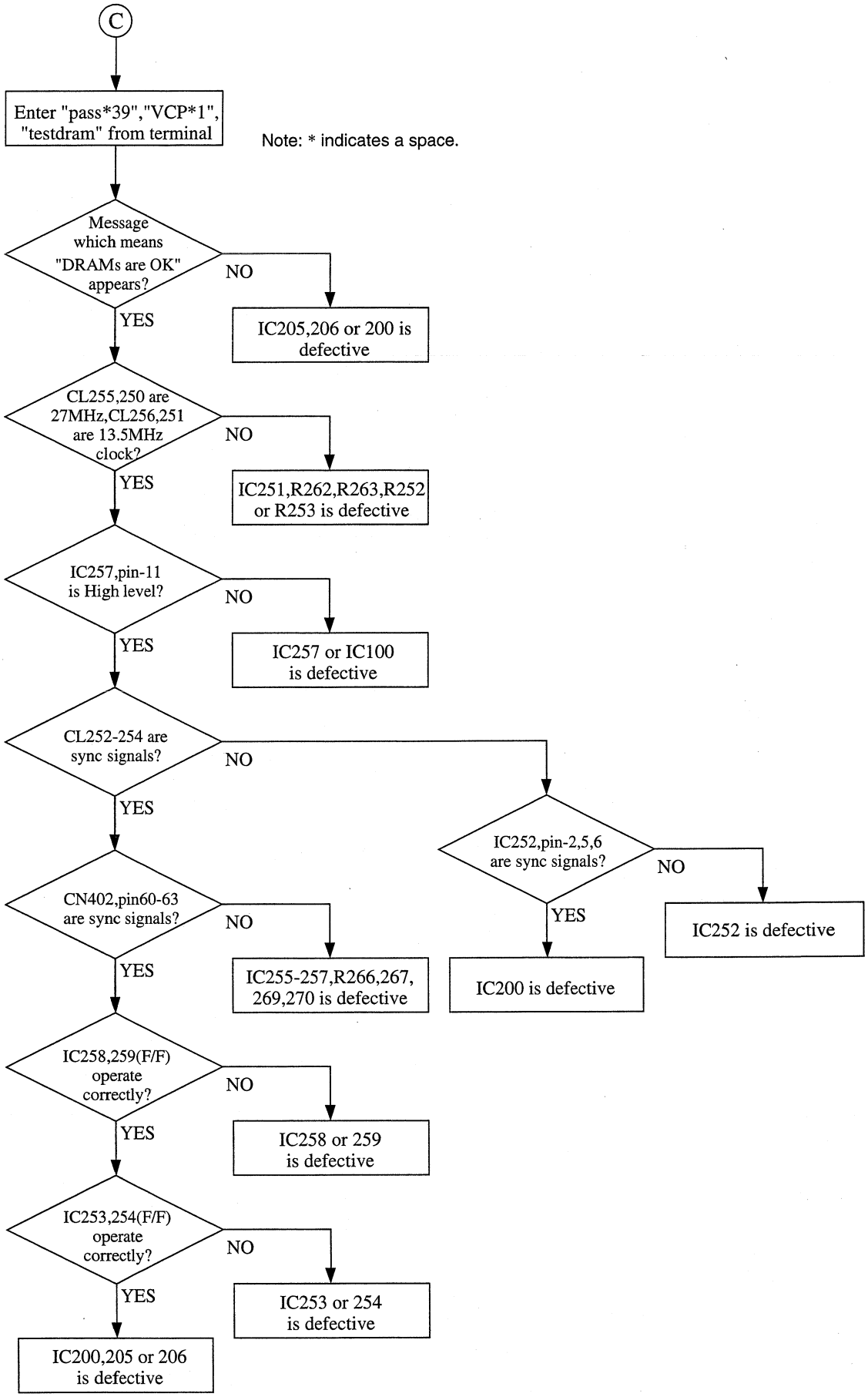
DPR-97 boad troubleshooting

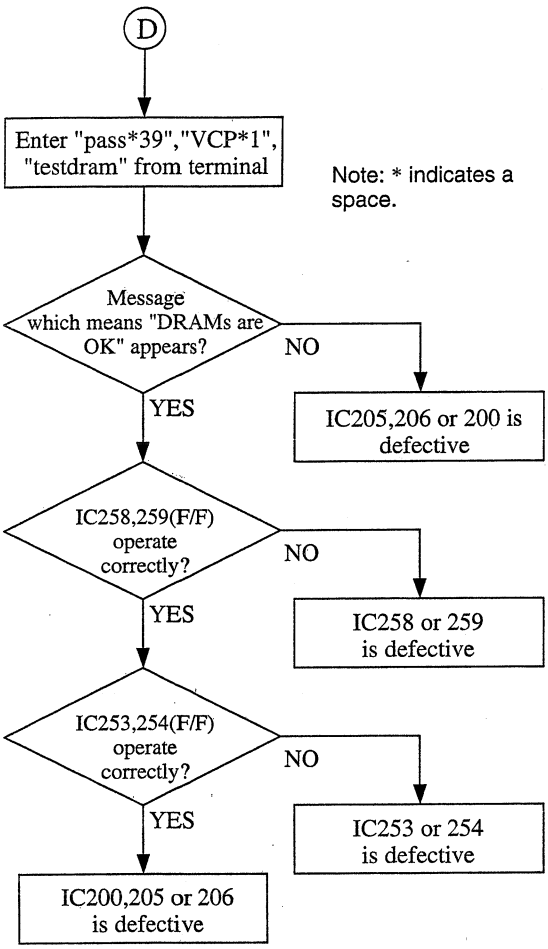


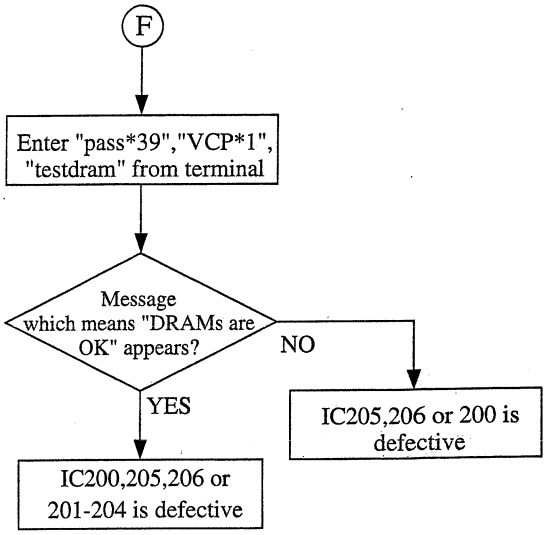

A
Check the message from debugger and turn on again
Only message "ooooooooo!o" appears?
NO
YES
I/O access to other board is completed?
NO
YES
IC101,104,100,102 or 103 is defective
X200,Pin-3 (R201) is 33MHz clock?
NO
YES
X200 is defective
IC100-105 or 200 is defective
IC100,Pin-4 is High level?
NO
YES
IC104,Pin-15 is Low level?
NO
YES
IC104 is defective
Operate "PCS(mini)" and verify I/O address 180h
IC106,Pin-6 is High level?
NO
YES
IC106 is defective
IC100-105 is defective
Read data=Written data?
NO
YES
IC101,104,100,102 or 103 is defective
IC200,100, 102 or 103 is defective

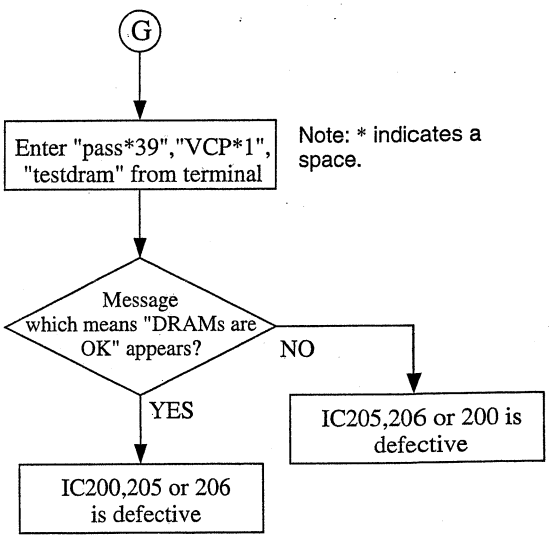

B
Check the message from debugger and operate again
Only message "ooooooooo!o" appears?
YES
NO
Operate "PCS(mini)" and verify I/O address 180h
Message "APR_ INITIALISE ...error!!" appears?
YES
NO
IC101,104,100,102 or 103 is defective
Read data=Written data?
NO
YES
IC101,104,100,102 or 103 is defective
IC200,100, 102 or 103 is defective
Message "HALT" appears?
Yes
NO
Message "VCP Board Reset(NG)" appears?
YES
NO
IC104,100 or 200 is defective
Message "Sram Hard Error" appears?
YES
NO
IC201-204 or 200 is defective
IC200 is defective
Message "VCP#1 Monitor Download" appears?
NO
YES
IC200 or 100-105 is defective
Message "VCP#1 VP Download ---NORMAL END" appears?
NO
YES
IC103,102,100,101 or 200-204 is defective
B-1

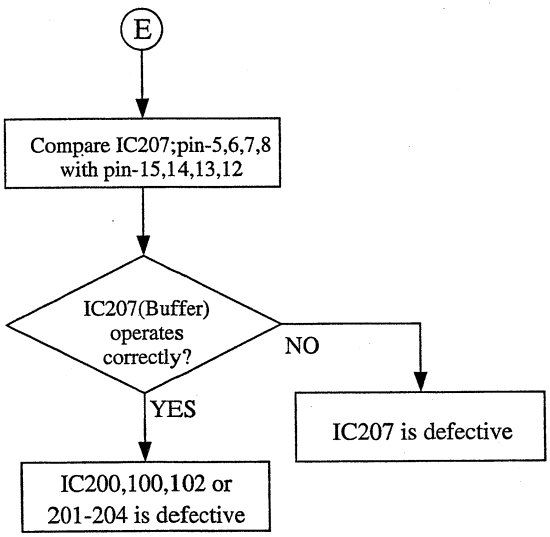

B-1
CL255 is 27MHz, CL256 is 13.5MHz clock?
NO
IC251,R262,R263 is defective
YES
CL250 is 27MHz, CL251 is 13.5MHz clock?
NO
IC251,R252,R253 is defective
YES
IC257,pin-11 is High level?
NO
IC257 or IC100 is defective
YES
CL252-254 are sync signals?
NO
YES
IC255-257,R266,267, 269,270 is defective
IC252,pin-2,5,6 are sync signals?
NO
IC252 is defective
YES
IC200 is defective

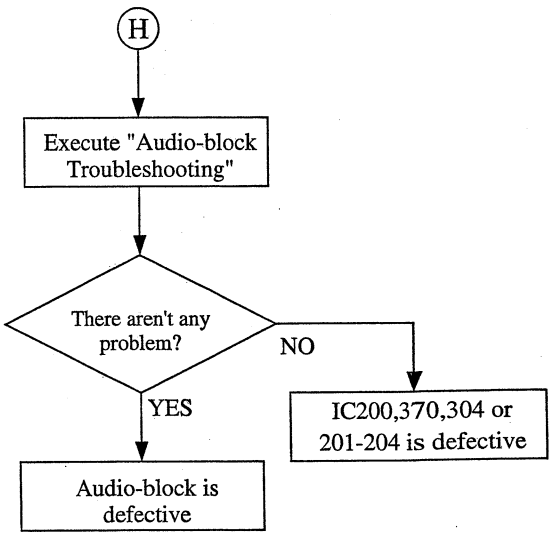

C
Enter "pass*39","VCP*1", "testdram" from terminal
Note: * indicates a space.
Message which means "DRAMs are OK" appears?
NO
IC205,206 or 200 is defective
YES
CL255,250 are 27MHz,CL256,251 are 13.5MHz clock?
NO
IC251,R262,R263,R252 or R253 is defective
YES
IC257,pin-11 is High level?
NO
IC257 or IC100 is defective
YES
CL252-254 are sync signals?
NO
IC252,pin-2,5,6 are sync signals?
NO
IC252 is defective
YES
IC200 is defective
YES
CN402,pin60-63 are sync signals?
NO
IC255-257,R266,267, 269,270 is defective
YES
IC258,259(F/F) operate correctly?
NO
IC258 or 259 is defective
YES
IC253,254(F/F) operate correctly?
NO
IC253 or 254 is defective
YES
IC200,205 or 206 is defective


D
Enter "pass*39","VCP*1", "testdram" from terminal
Note: * indicates a space.
Message which means "DRAMs are OK" appears?
NO
IC205,206 or 200 is defective
YES
IC258,259(F/F) operate correctly?
NO
IC258 or 259 is defective
YES
IC253,254(F/F) operate correctly?
NO
IC253 or 254 is defective
YES
IC200,205 or 206 is defective

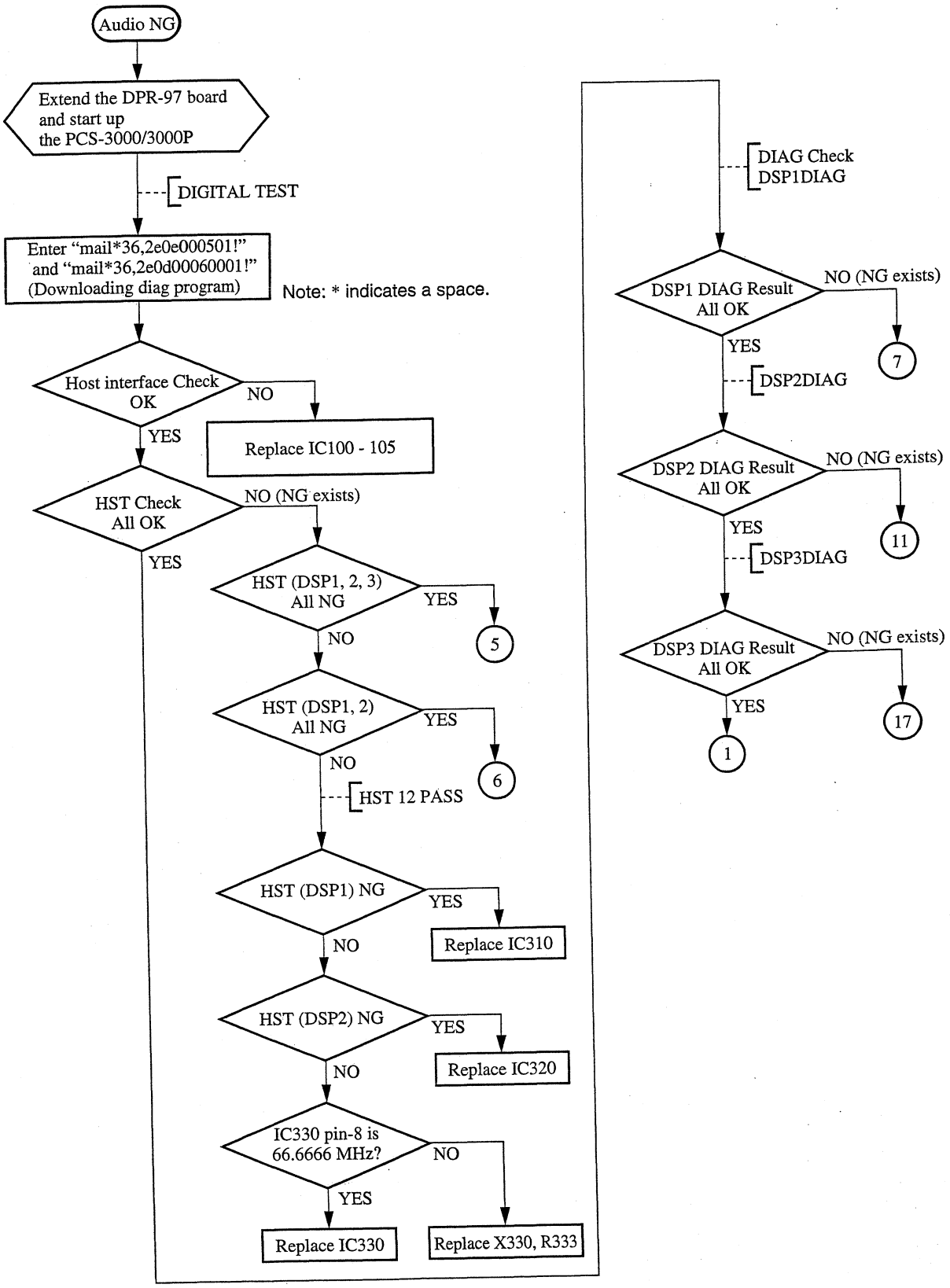

F
Enter "pass*39","VCP*1", "testdram" from terminal
Message which means "DRAMs are OK" appears?
NO
IC205,206 or 200 is defective
YES
IC200,205,206 or 201-204 is defective

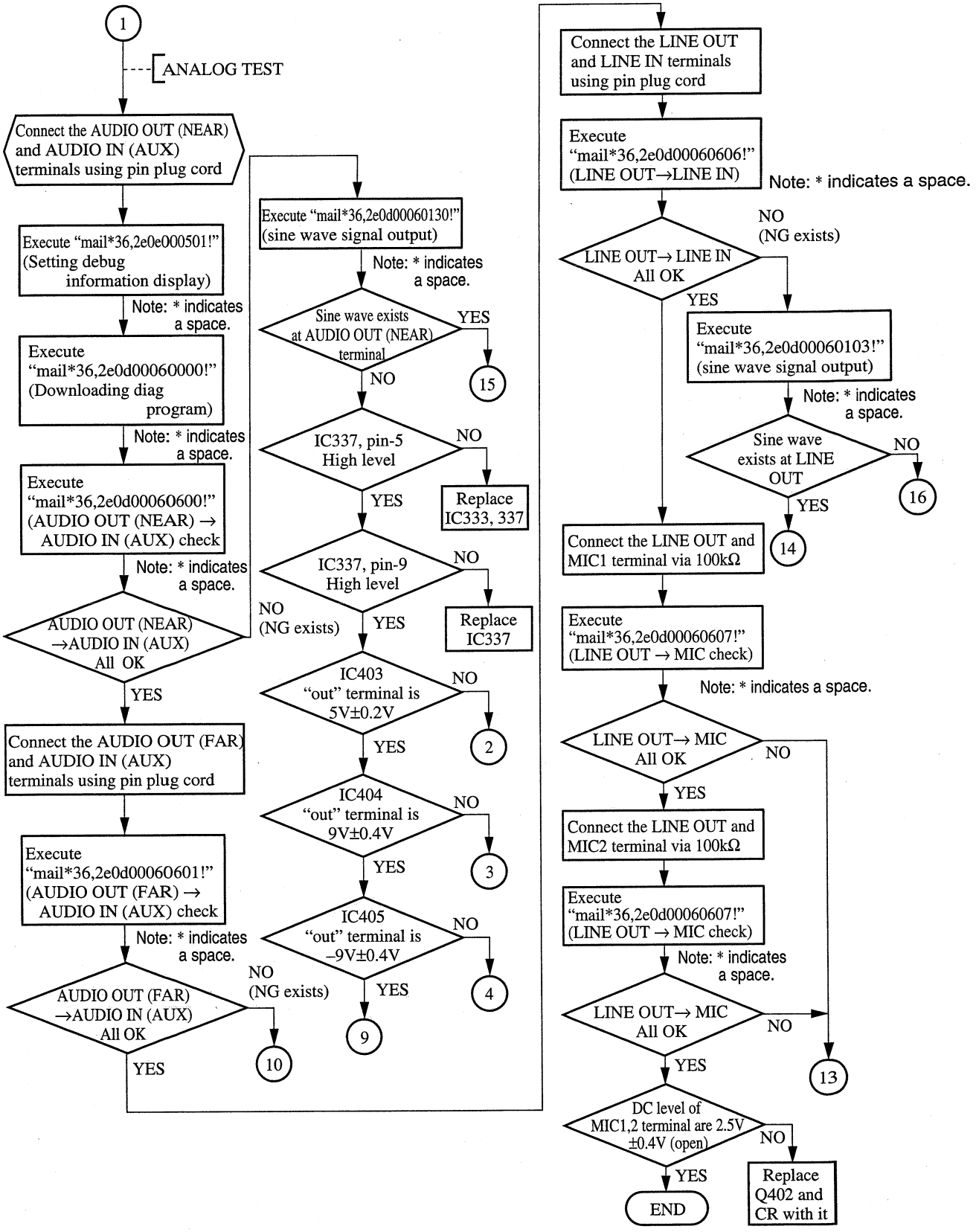

G
Enter "pass*39","VCP*1", "testdram" from terminal
Note: * indicates a space.
Message which means "DRAMs are OK" appears?
NO
IC205,206 or 200 is defective
YES
IC200,205 or 206 is defective

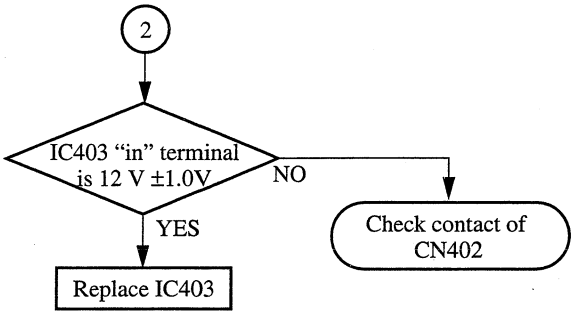

E
Compare IC207;pin-5,6,7,8 with pin-15,14,13,12
IC207(Buffer) operates correctly?
NO
IC207 is defective
YES
IC200,100,102 or 201-204 is defective

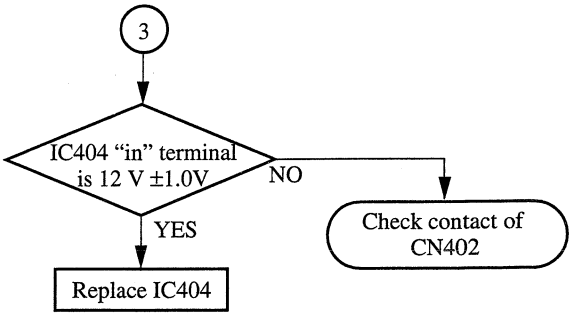

H
Execute "Audio-block Troubleshooting"
There aren't any problem?
NO
IC200,370,304 or 201-204 is defective
YES
Audio-block is defective

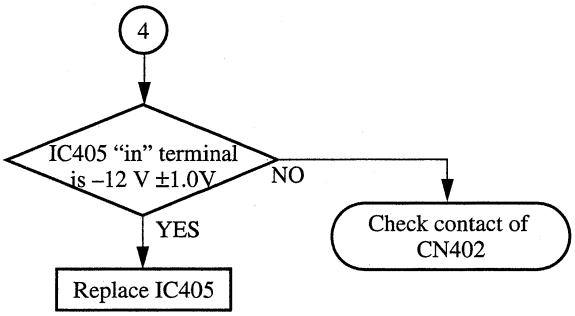
Trobleshooting for audio block

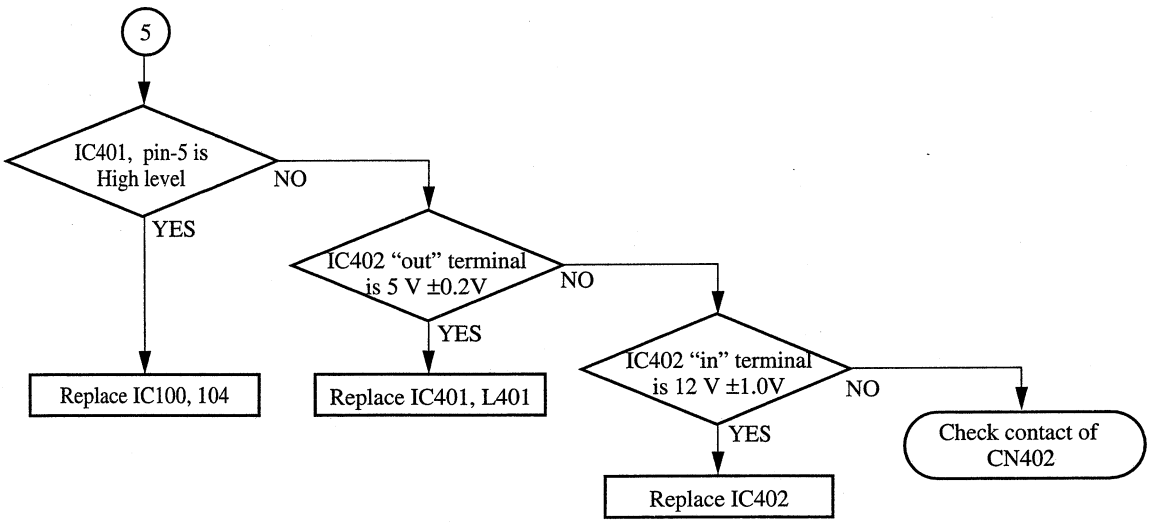


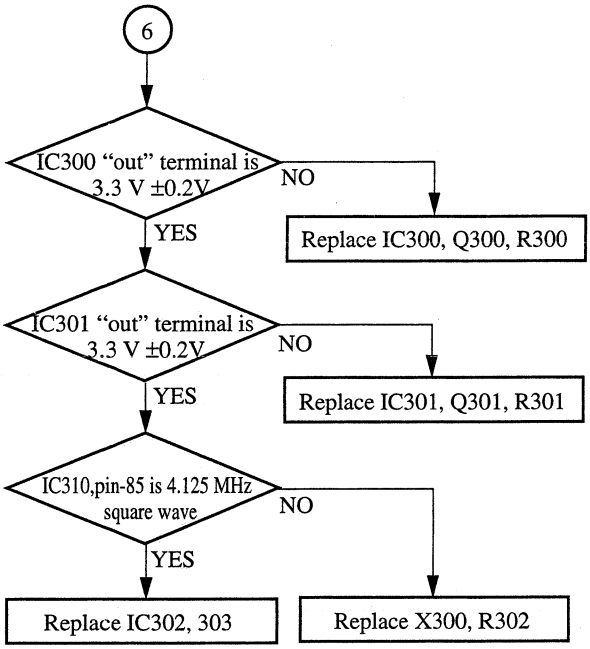

1
ANALOG TEST
Connect the AUDIO OUT (NEAR) and AUDIO IN (AUX) terminals using pin plug cord
Execute "mail*36,2e0e000501!" (Setting debug information display)
Note: * indicates a space.
Execute "mail*36,2e0d00060000!" (Downloading diag program)
Note: * indicates a space.
Execute "mail*36,2e0d00060600!" (AUDIO OUT (NEAR) → AUDIO IN (AUX) check
Note: * indicates a space.
AUDIO OUT (NEAR) →AUDIO IN (AUX) All OK
NO (NG exists)
YES
Connect the AUDIO OUT (FAR) and AUDIO IN (AUX) terminals using pin plug cord
Execute "mail*36,2e0d00060601!" (AUDIO OUT (FAR) → AUDIO IN (AUX) check
Note: * indicates a space.
AUDIO OUT (FAR) →AUDIO IN (AUX) All OK
NO (NG exists)
YES
10
Execute "mail*36,2e0d00060130!" (sine wave signal output)
Note: * indicates a space.
Sine wave exists at AUDIO OUT (NEAR) terminal
YES
15
NO
IC337, pin-5 High level
NO
Replace IC333, 337
YES
IC337, pin-9 High level
NO
Replace IC337
YES
IC403 "out" terminal is 5V±0.2V
NO
2
YES
IC404 "out" terminal is 9V±0.4V
NO
3
YES
IC405 "out" terminal is -9V±0.4V
NO
4
YES
9
Connect the LINE OUT and LINE IN terminals using pin plug cord
Execute "mail*36,2e0d00060606!" (LINE OUT→LINE IN)
Note: * indicates a space.
LINE OUT→ LINE IN All OK
NO (NG exists)
YES
Execute "mail*36,2e0d00060103!" (sine wave signal output)
Note: * indicates a space.
Sine wave exists at LINE OUT
NO
16
YES
14
Connect the LINE OUT and MIC1 terminal via 100kΩ
Execute "mail*36,2e0d00060607!" (LINE OUT → MIC check)
Note: * indicates a space.
LINE OUT→ MIC All OK
NO
YES
Connect the LINE OUT and MIC2 terminal via 100kΩ
Execute "mail*36,2e0d00060607!" (LINE OUT → MIC check)
Note: * indicates a space.
LINE OUT→ MIC All OK
NO
13
YES
DC level of MIC1,2 terminal are 2.5V ±0.4V (open)
NO
Replace Q402 and CR with it
YES
END

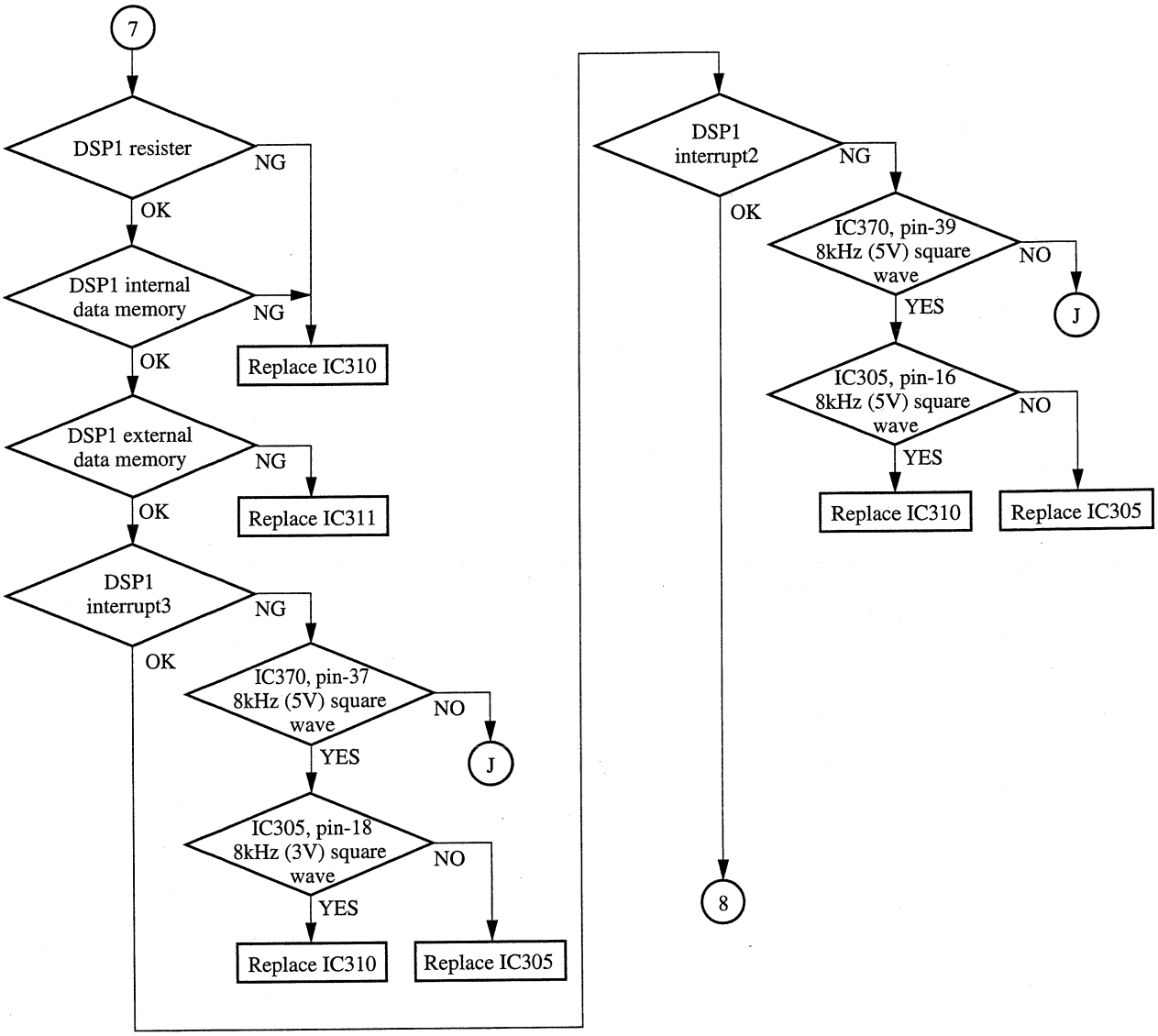

2
IC403 "in" terminal is 12 V ±1.0V
NO
YES
Check contact of CN402
Replace IC403

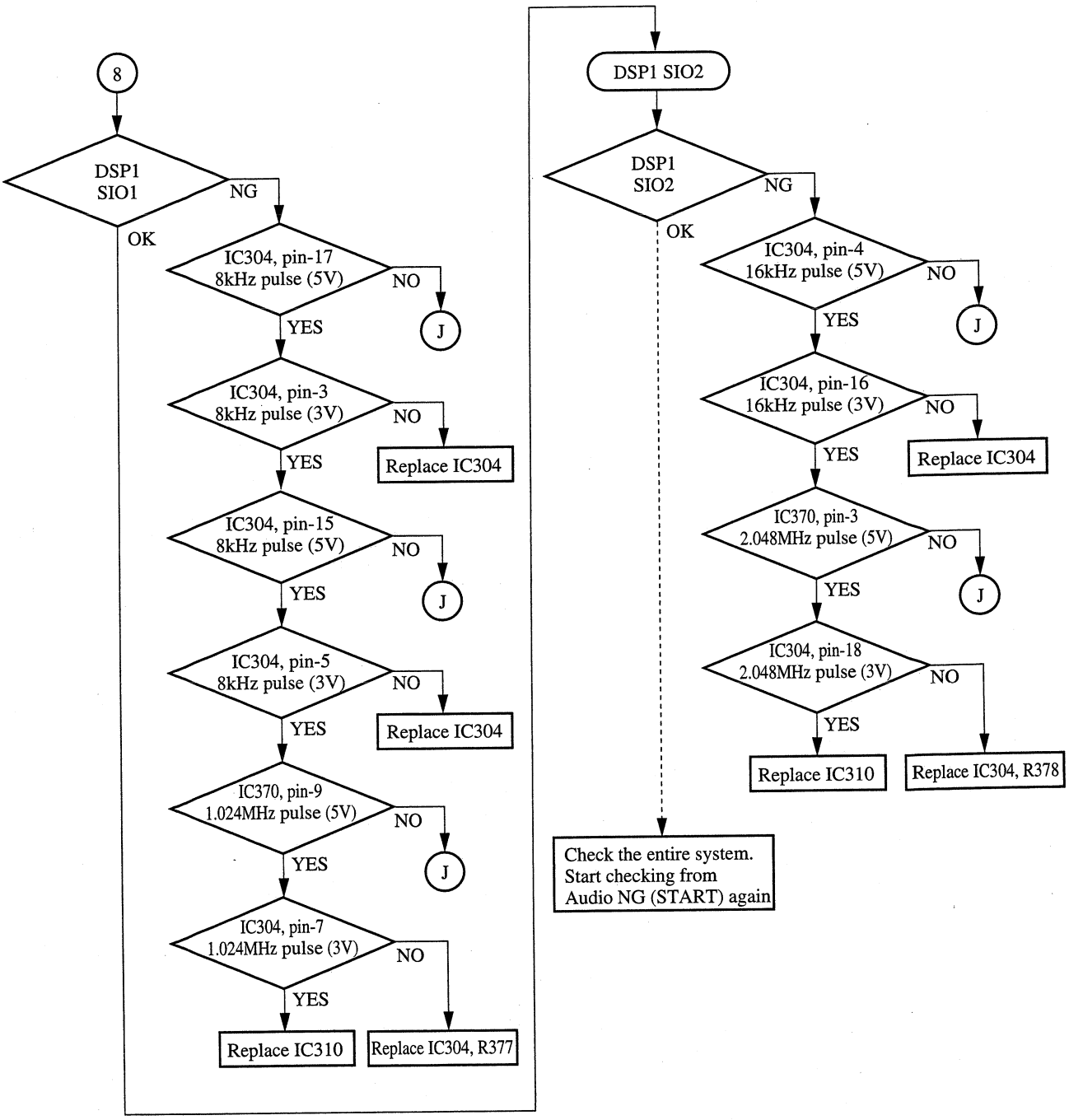

3
IC404 "in" terminal is 12 V ±1.0V
NO
YES
Check contact of CN402
Replace IC404

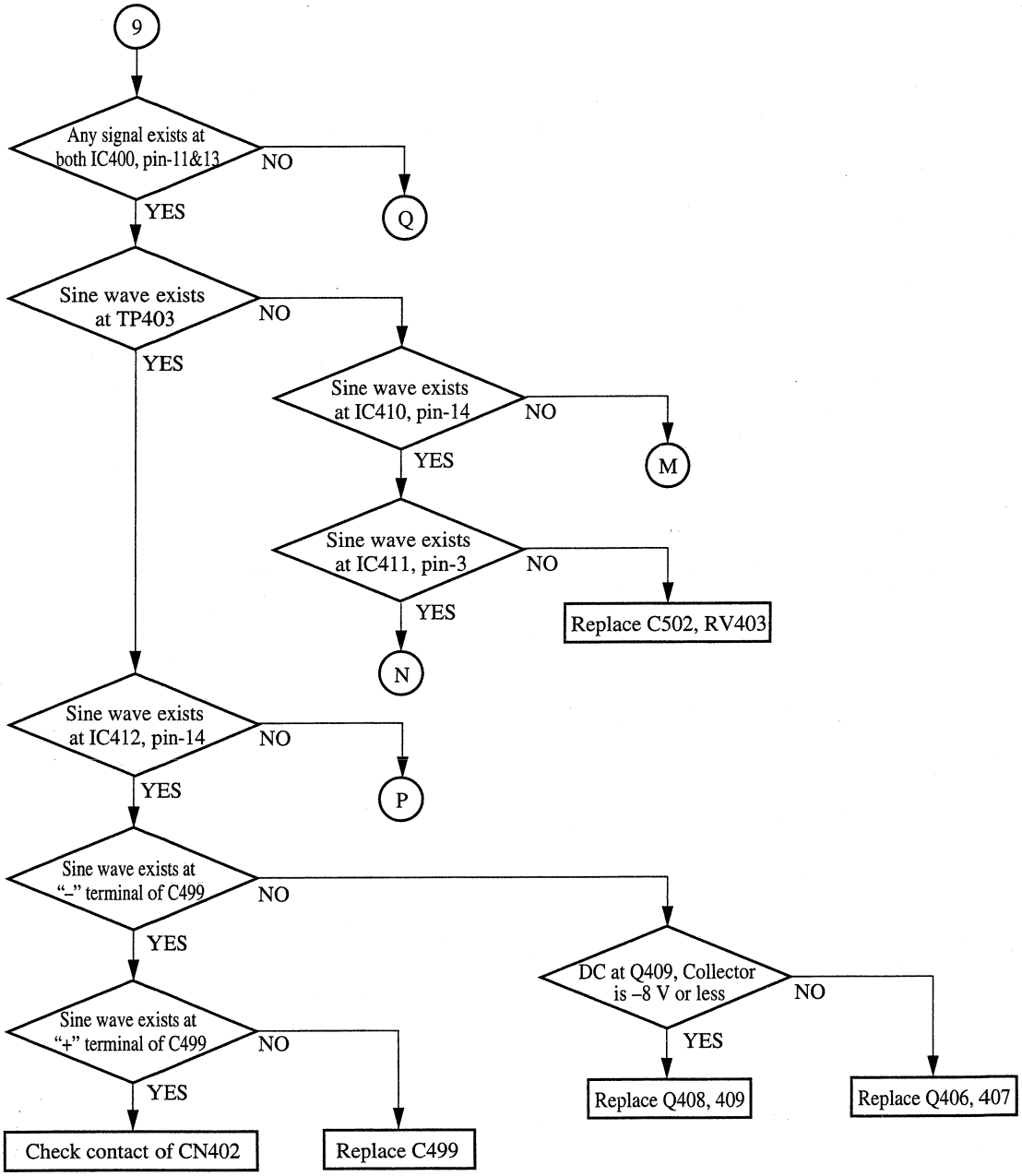

4
IC405 "in" terminal is –12 V ±1.0V
NO
YES
Check contact of CN402
Replace IC405

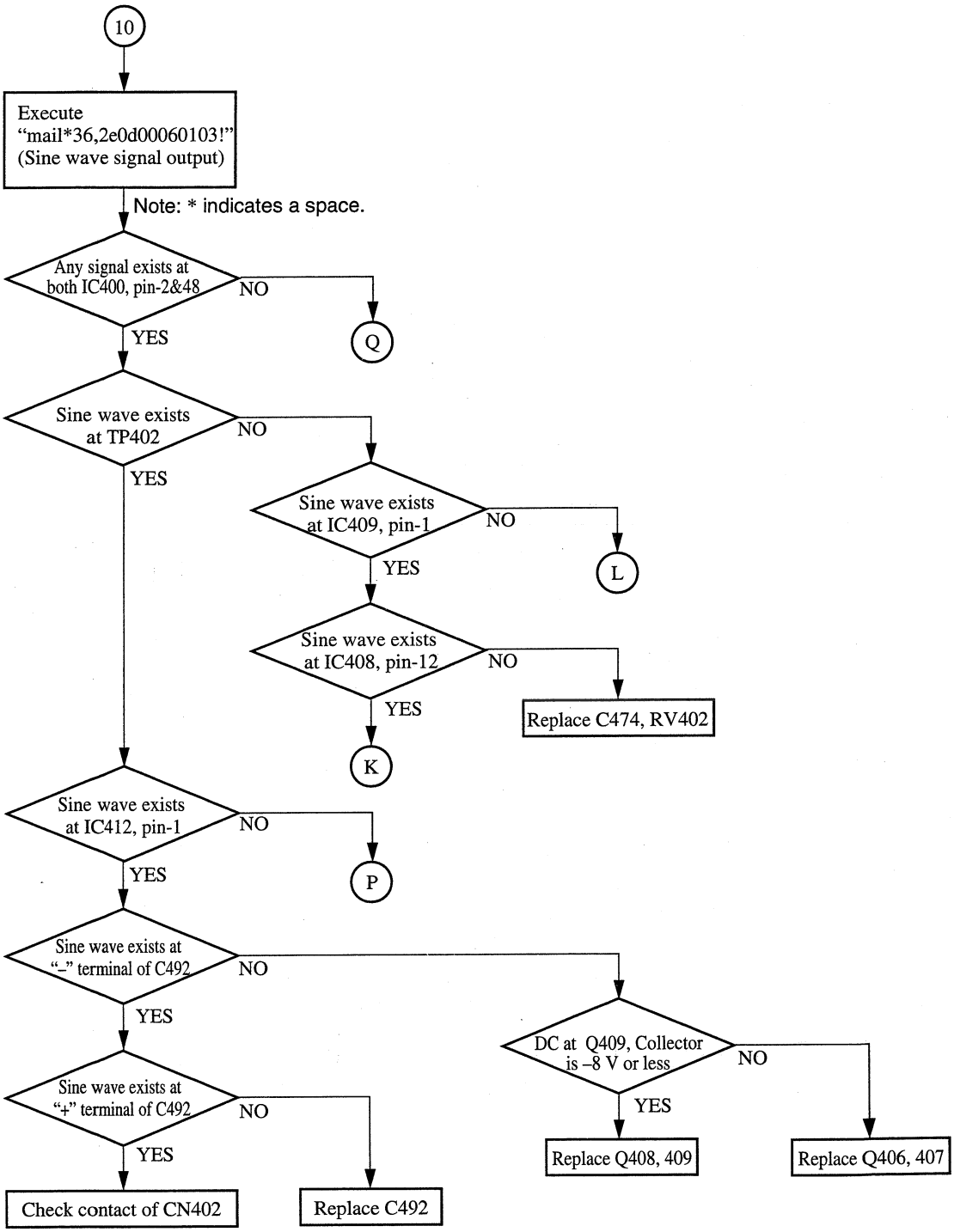

5
IC401, pin-5 is High level
NO
YES
IC402 "out" terminal is 5 V ±0.2V
NO
YES
IC402 "in" terminal is 12 V ±1.0V
NO
YES
Check contact of CN402
Replace IC100, 104
Replace IC401, L401
Replace IC402

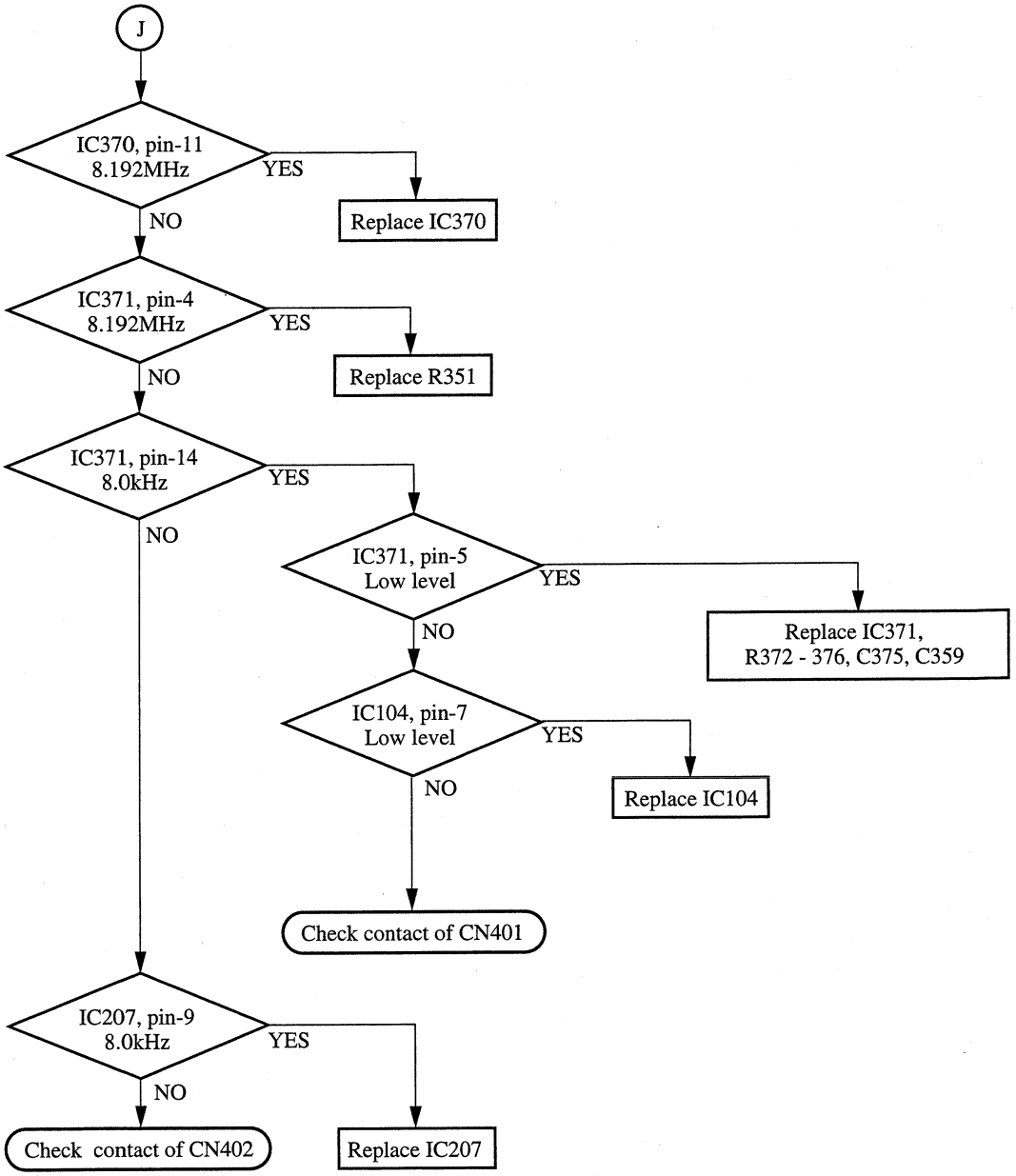

6
IC300 "out" terminal is 3.3 V ±0.2V
NO
Replace IC300, Q300, R300
YES
IC301 "out" terminal is 3.3 V ±0.2V
NO
Replace IC301, Q301, R301
YES
IC310,pin-85 is 4.125 MHz square wave
NO
YES
Replace IC302, 303
Replace X300, R302

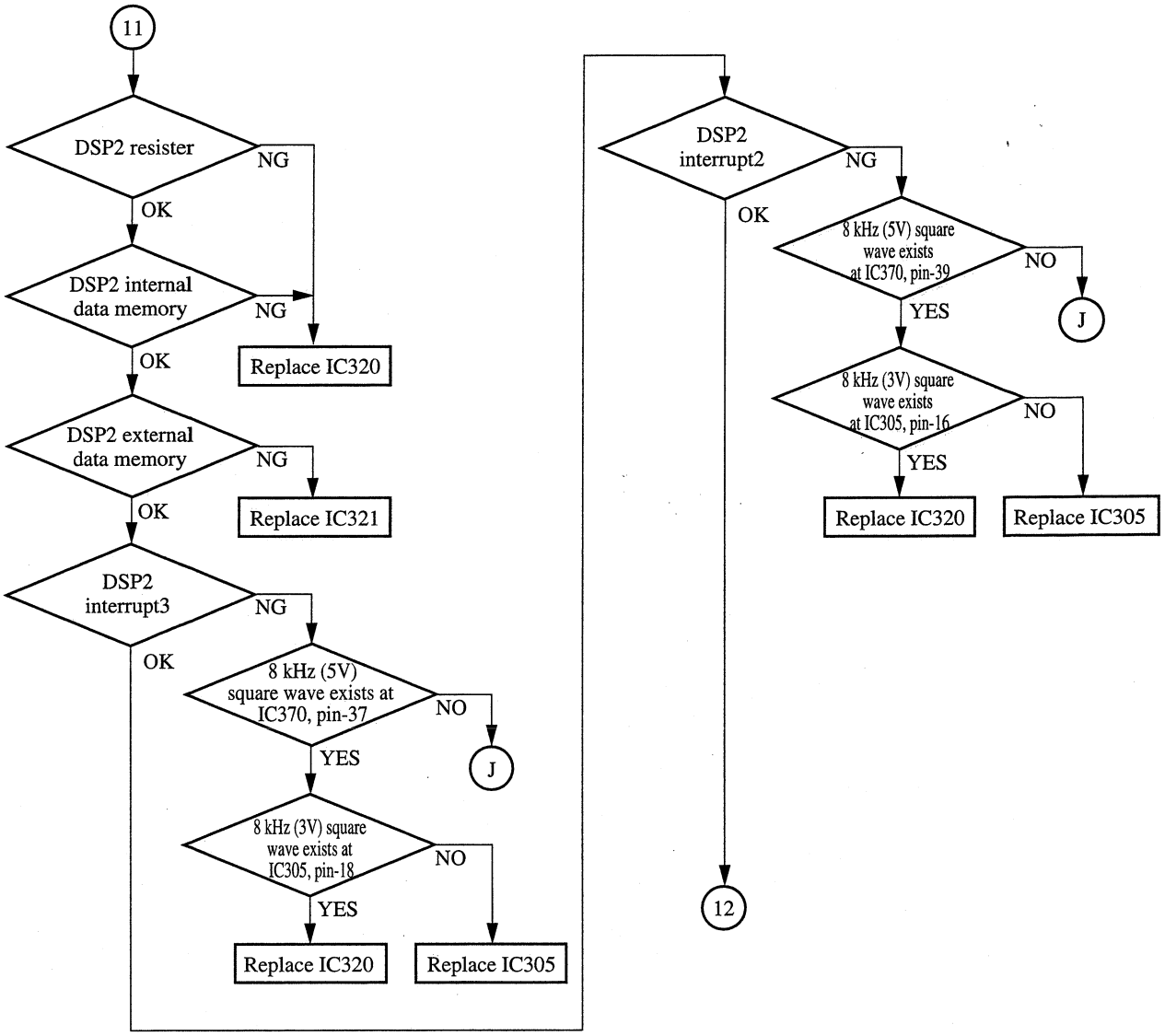

7
DSP1 resister
NG
OK
DSP1 internal data memory
NG
OK
Replace IC310
DSP1 external data memory
NG
OK
Replace IC311
DSP1 interrupt3
NG
OK
IC370, pin-37 8kHz (5V) square wave
NO
YES
J
IC305, pin-18 8kHz (3V) square wave
NO
YES
Replace IC310
Replace IC305
DSP1 interrupt2
NG
OK
IC370, pin-39 8kHz (5V) square wave
NO
YES
J
IC305, pin-16 8kHz (5V) square wave
NO
YES
Replace IC310
Replace IC305
8

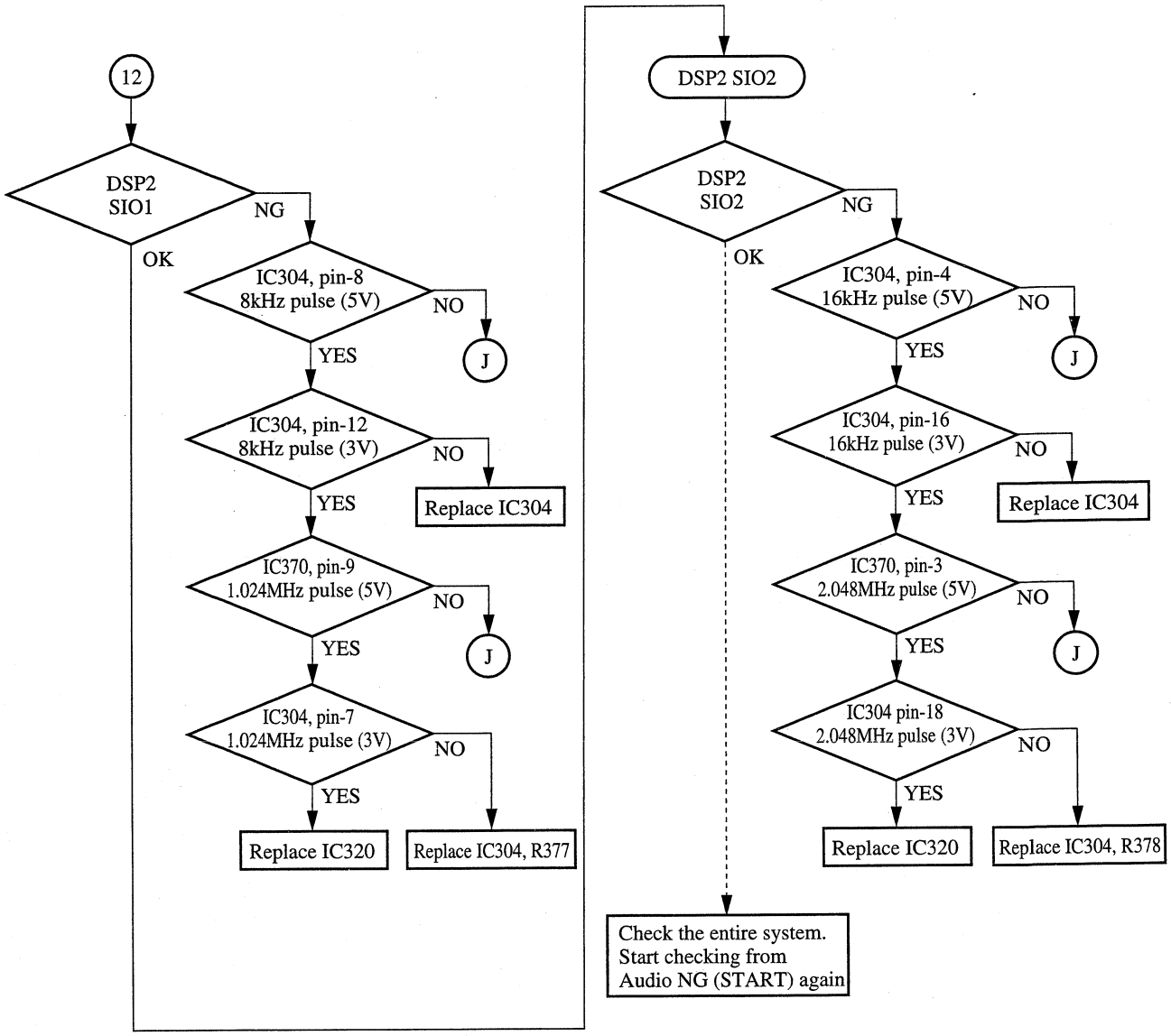

8
DSP1 SIO1
NG
OK
IC304, pin-17 8kHz pulse (5V)
NO
J
YES
IC304, pin-3 8kHz pulse (3V)
NO
Replace IC304
YES
IC304, pin-15 8kHz pulse (5V)
NO
J
YES
IC304, pin-5 8kHz pulse (3V)
NO
Replace IC304
YES
IC370, pin-9 1.024MHz pulse (5V)
NO
J
YES
IC304, pin-7 1.024MHz pulse (3V)
NO
YES
Replace IC310
Replace IC304, R377
DSP1 SIO2
DSP1 SIO2
NG
OK
IC304, pin-4 16kHz pulse (5V)
NO
J
YES
IC304, pin-16 16kHz pulse (3V)
NO
Replace IC304
YES
IC370, pin-3 2.048MHz pulse (5V)
NO
J
YES
IC304, pin-18 2.048MHz pulse (3V)
NO
YES
Replace IC310
Replace IC304, R378
Check the entire system. Start checking from Audio NG (START) again

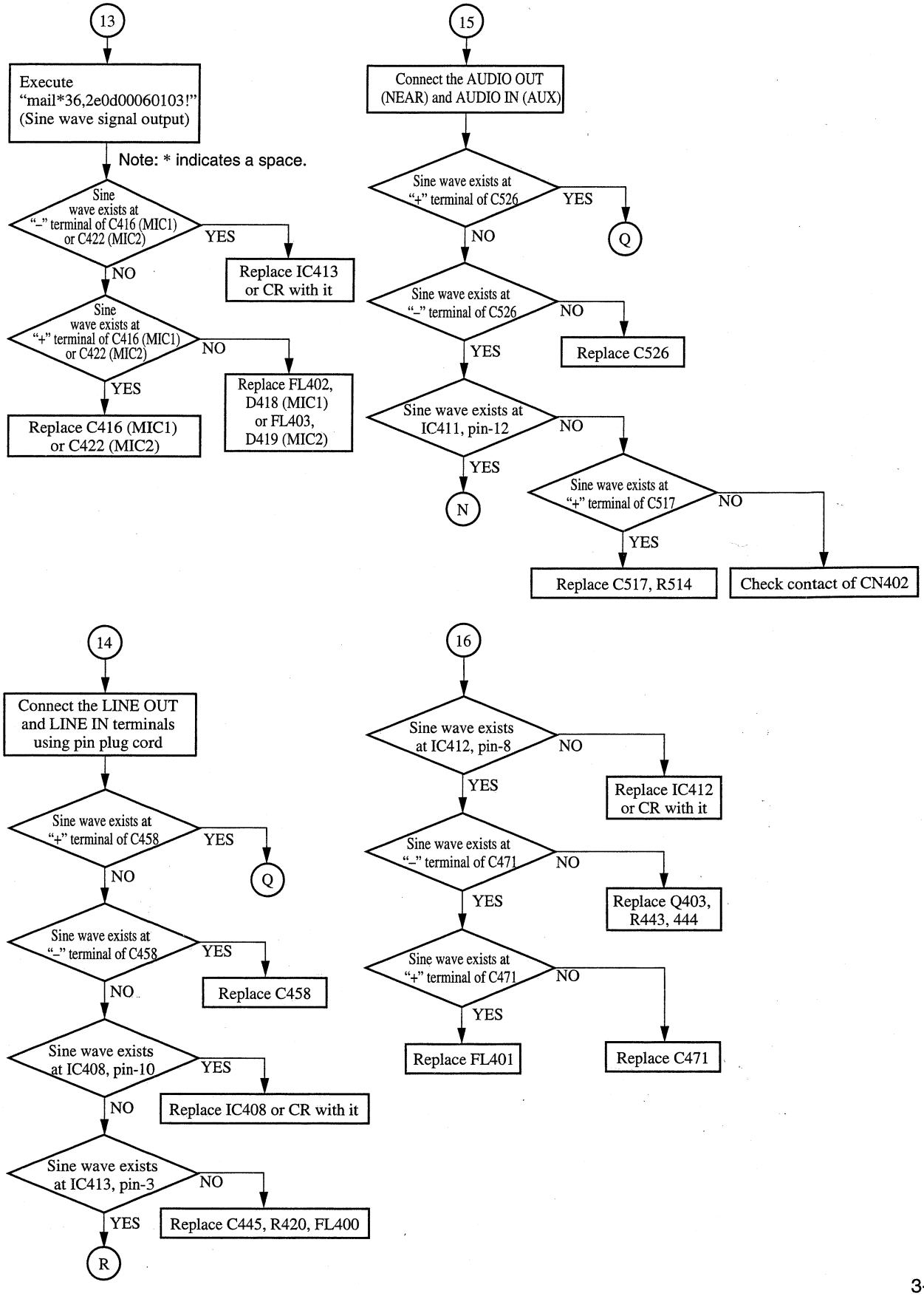

9
Any signal exists at both IC400, pin-11&13
NO
Q
YES
Sine wave exists at TP403
NO
YES
Sine wave exists at IC410, pin-14
NO
M
YES
Sine wave exists at IC411, pin-3
NO
Replace C502, RV403
YES
N
Sine wave exists at IC412, pin-14
NO
P
YES
Sine wave exists at "–" terminal of C499
NO
YES
DC at Q409, Collector is –8 V or less
NO
YES
Sine wave exists at "+" terminal of C499
NO
YES
Replace Q408, 409
Replace Q406, 407
Check contact of CN402
Replace C499

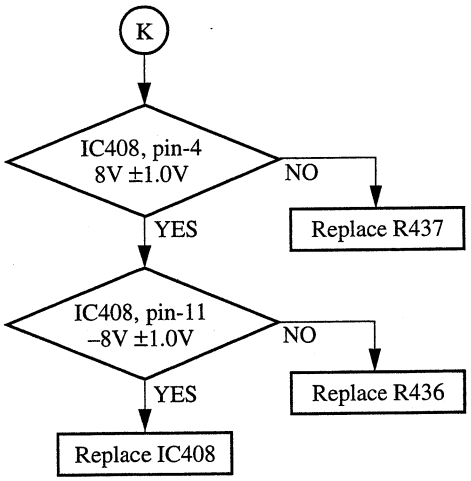

10
Execute
"mail*36,2e0d00060103!"
(Sine wave signal output)
Note: * indicates a space.
Any signal exists at both IC400, pin-2&48
NO
YES
Q
Sine wave exists at TP402
NO
YES
Sine wave exists at IC409, pin-1
NO
YES
L
Sine wave exists at IC408, pin-12
NO
YES
Replace C474, RV402
K
Sine wave exists at IC412, pin-1
NO
YES
P
Sine wave exists at "–" terminal of C492
NO
YES
DC at Q409, Collector is –8 V or less
NO
YES
Replace Q408, 409
Replace Q406, 407
Sine wave exists at "+" terminal of C492
NO
YES
Check contact of CN402
Replace C492

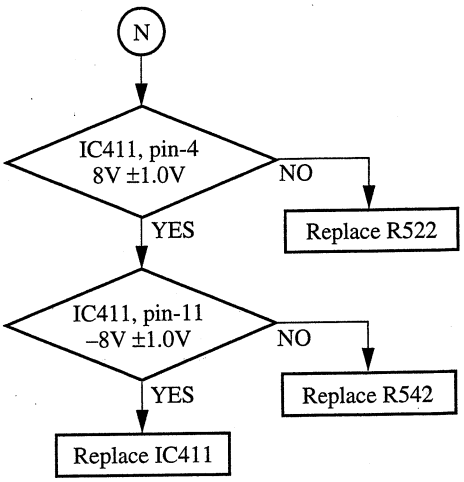

J
IC370, pin-11
8.192MHz
YES
Replace IC370
NO
IC371, pin-4
8.192MHz
YES
Replace R351
NO
IC371, pin-14
8.0kHz
YES
NO
IC371, pin-5
Low level
YES
Replace IC371,
R372 - 376, C375, C359
NO
IC104, pin-7
Low level
YES
Replace IC104
NO
Check contact of CN401
IC207, pin-9
8.0kHz
YES
NO
Check contact of CN402
Replace IC207

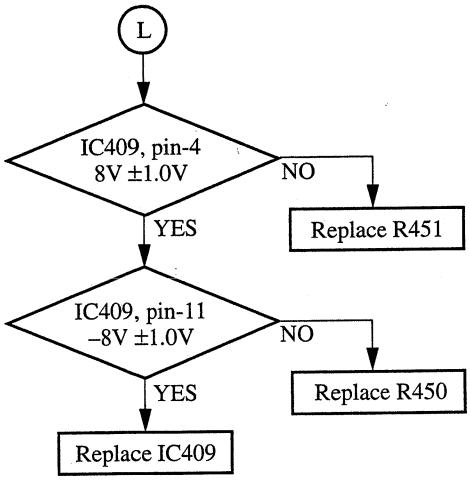

11
DSP2 resister
NG
OK
DSP2 internal data memory
NG
OK
Replace IC320
DSP2 external data memory
NG
OK
Replace IC321
DSP2 interrupt3
NG
OK
8 kHz (5V) square wave exists at IC370, pin-37
NO
YES
J
8 kHz (3V) square wave exists at IC305, pin-18
NO
YES
Replace IC320
Replace IC305
DSP2 interrupt2
NG
OK
8 kHz (5V) square wave exists at IC370, pin-39
NO
YES
J
8 kHz (3V) square wave exists at IC305, pin-16
NO
YES
Replace IC320
Replace IC305
12

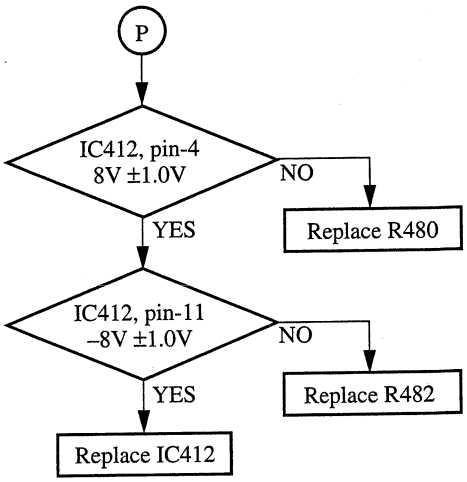

12
DSP2
SIO1
NG
OK
IC304, pin-8
8kHz pulse (5V)
NO
J
YES
IC304, pin-12
8kHz pulse (3V)
NO
Replace IC304
YES
IC370, pin-9
1.024MHz pulse (5V)
NO
J
YES
IC304, pin-7
1.024MHz pulse (3V)
NO
YES
Replace IC320
Replace IC304, R377
DSP2 SIO2
DSP2
SIO2
NG
OK
IC304, pin-4
16kHz pulse (5V)
NO
J
YES
IC304, pin-16
16kHz pulse (3V)
NO
Replace IC304
YES
IC370, pin-3
2.048MHz pulse (5V)
NO
J
YES
IC304 pin-18
2.048MHz pulse (3V)
NO
YES
Replace IC320
Replace IC304, R378
Check the entire system.
Start checking from
Audio NG (START) again

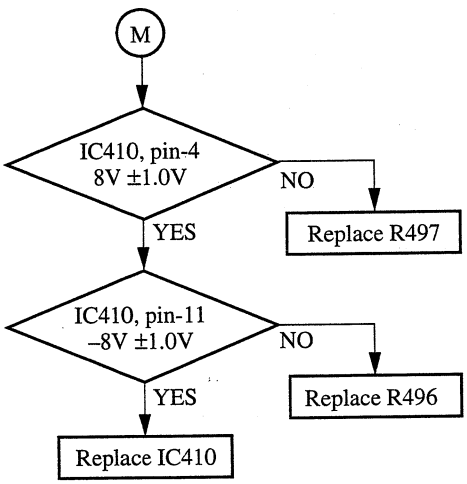

13
Execute
"mail*36,2e0d00060103!"
(Sine wave signal output)
Note: * indicates a space.
Sine wave exists at "–" terminal of C416 (MIC1) or C422 (MIC2)
YES
Replace IC413 or CR with it
NO
Sine wave exists at "+" terminal of C416 (MIC1) or C422 (MIC2)
NO
Replace FL402, D418 (MIC1) or FL403, D419 (MIC2)
YES
Replace C416 (MIC1) or C422 (MIC2)
15
Connect the AUDIO OUT (NEAR) and AUDIO IN (AUX)
Sine wave exists at "+" terminal of C526
YES
Q
NO
Sine wave exists at "–" terminal of C526
NO
Replace C526
YES
Sine wave exists at IC411, pin-12
NO
YES
N
Sine wave exists at "+" terminal of C517
NO
YES
Replace C517, R514
Check contact of CN402
14
Connect the LINE OUT and LINE IN terminals using pin plug cord
Sine wave exists at "+" terminal of C458
YES
Q
NO
Sine wave exists at "–" terminal of C458
YES
Replace C458
NO
Sine wave exists at IC408, pin-10
YES
Replace IC408 or CR with it
NO
Sine wave exists at IC413, pin-3
NO
Replace C445, R420, FL400
YES
R
16
Sine wave exists at IC412, pin-8
NO
Replace IC412 or CR with it
YES
Sine wave exists at "–" terminal of C471
NO
Replace Q403, R443, 444
YES
Sine wave exists at "+" terminal of C471
NO
YES
Replace FL401
Replace C471

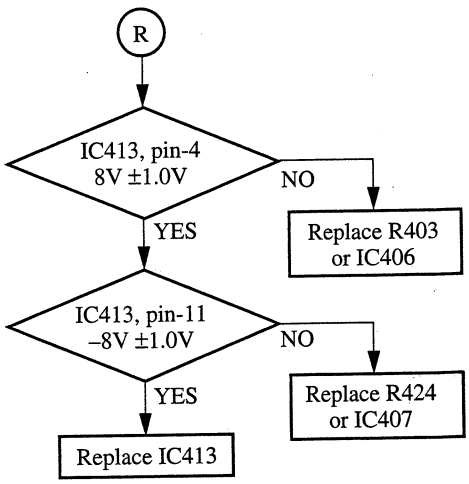

K
IC408, pin-4
8V ±1.0V
NO
Replace R437
YES
IC408, pin-11
–8V ±1.0V
NO
Replace R436
YES
Replace IC408

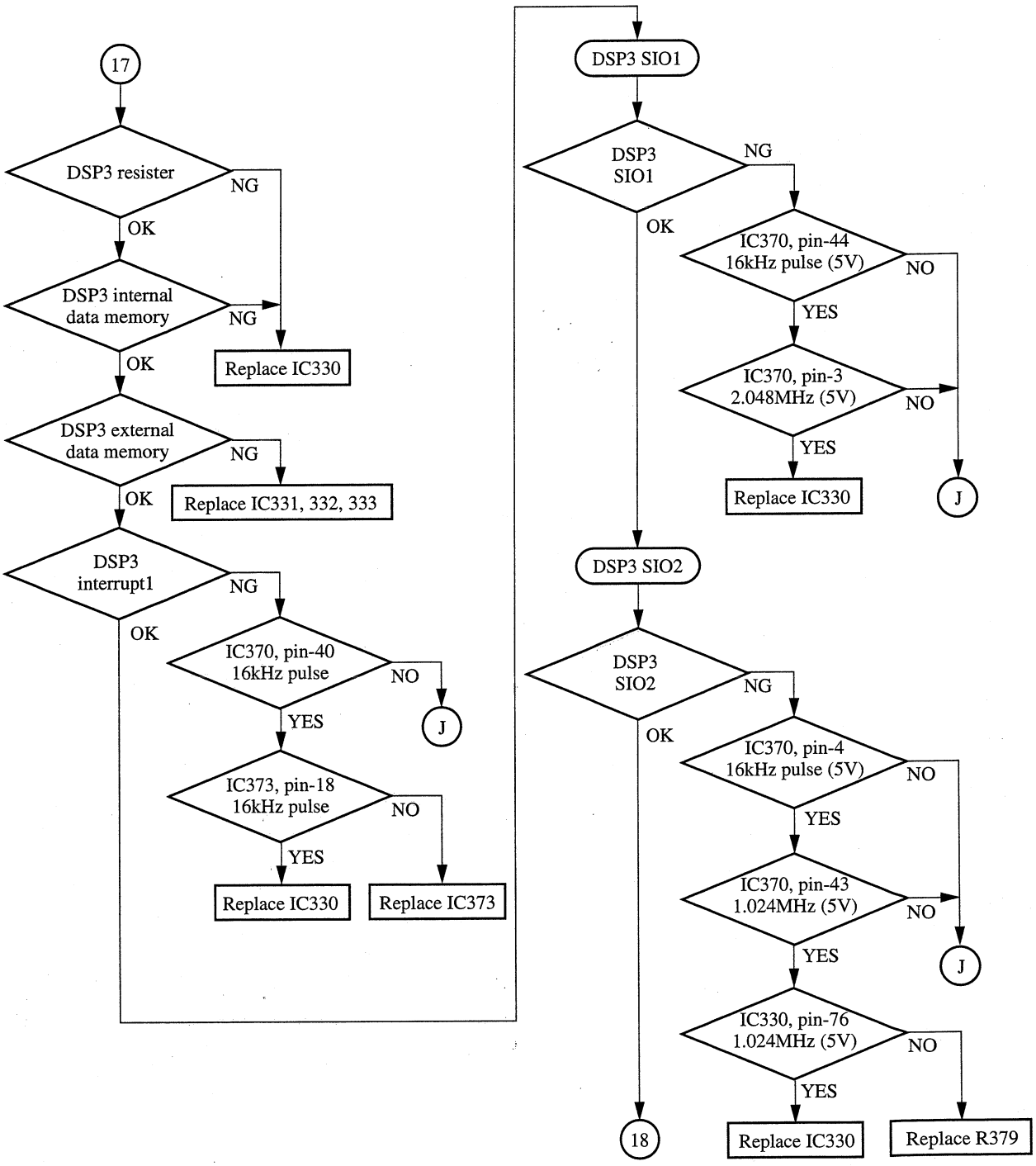

N
IC411, pin-4
8V ±1.0V
NO
Replace R522
YES
IC411, pin-11
–8V ±1.0V
NO
Replace R542
YES
Replace IC411

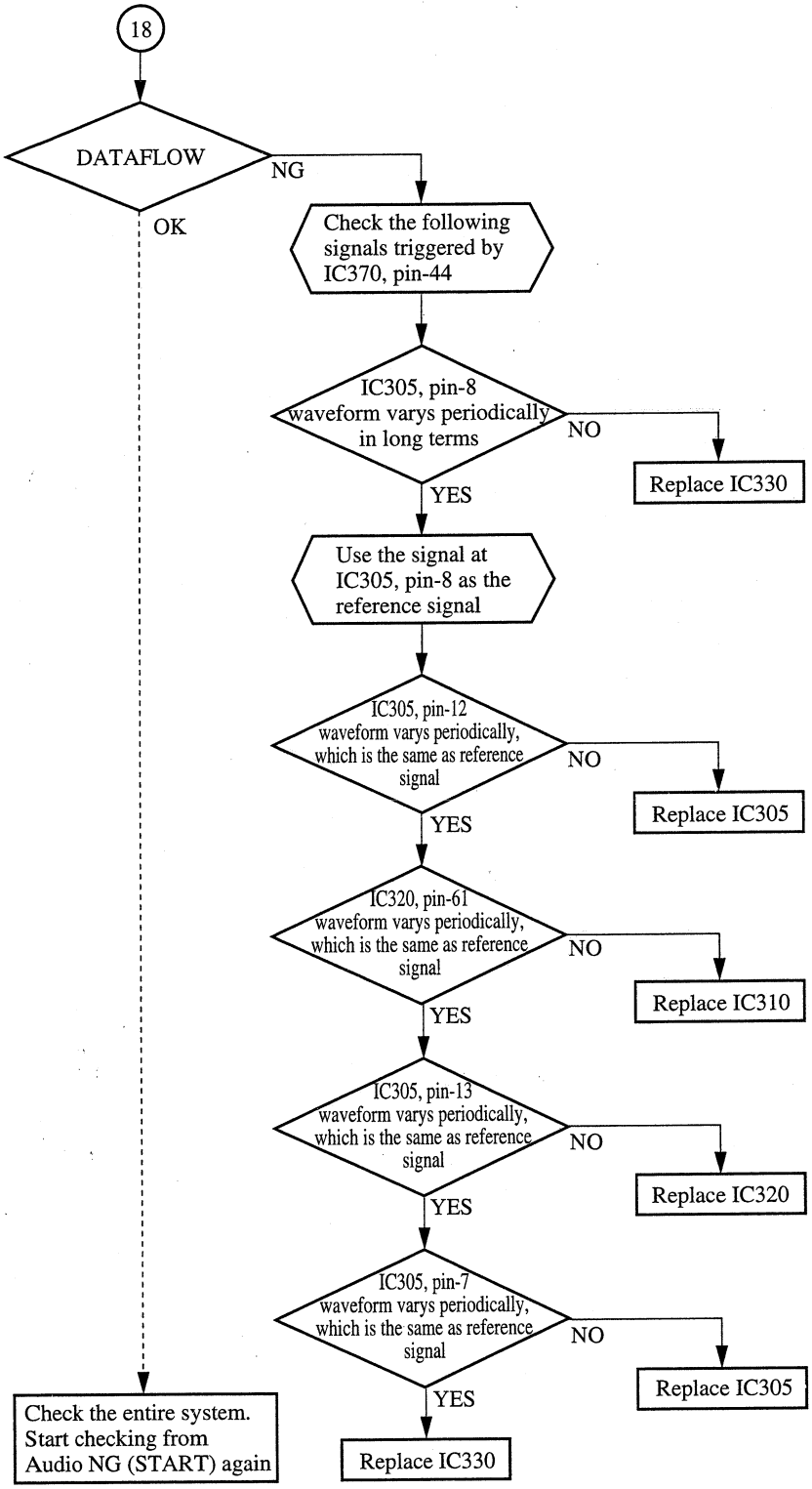

L
IC409, pin-4
8V ±1.0V
NO
Replace R451
YES
IC409, pin-11
–8V ±1.0V
NO
Replace R450
YES
Replace IC409

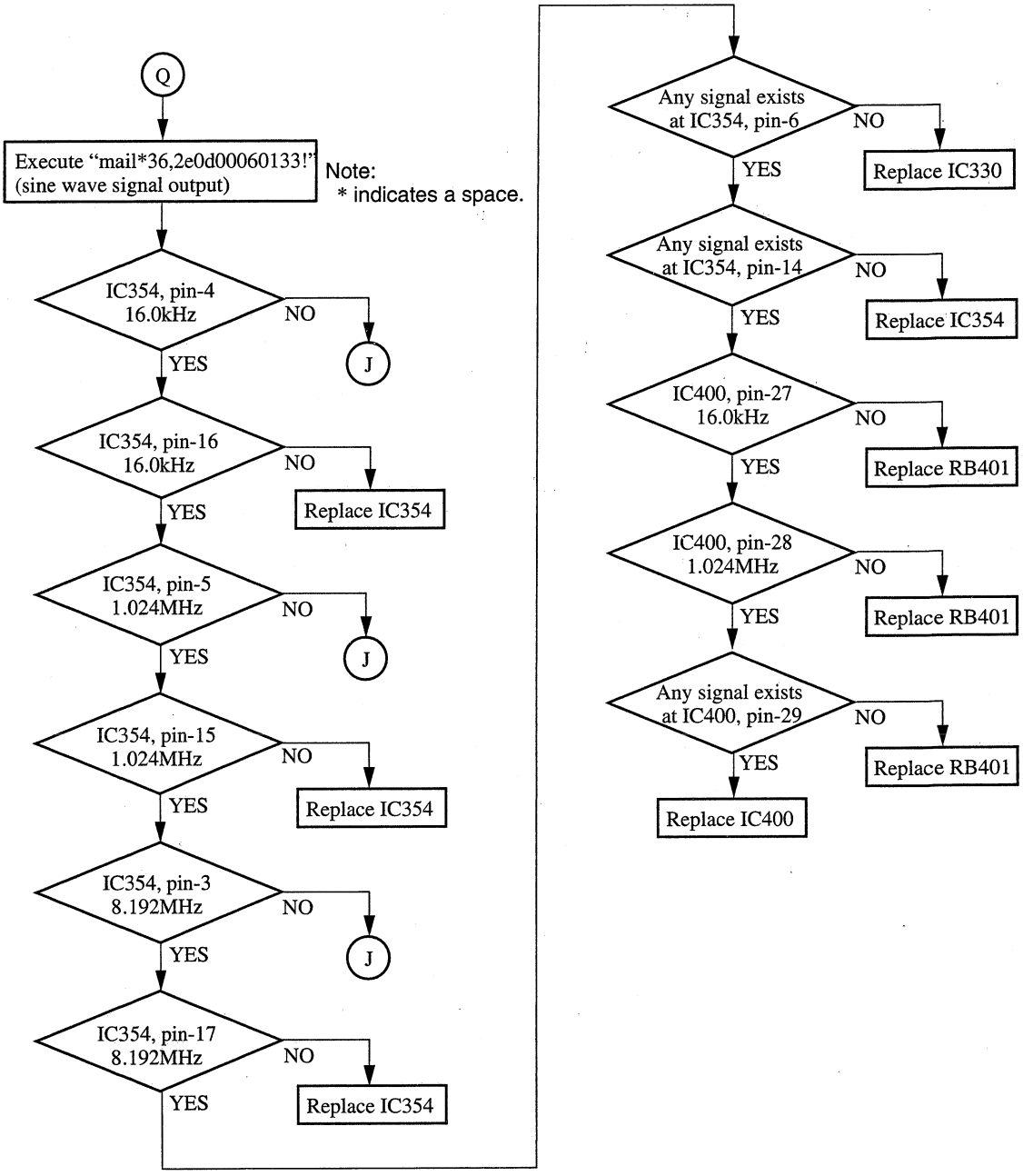

P
IC412, pin-4
8V ±1.0V
NO
Replace R480
YES
IC412, pin-11
–8V ±1.0V
NO
Replace R482
YES
Replace IC412


M
IC410, pin-4
8V ±1.0V
NO
Replace R497
YES
IC410, pin-11
–8V ±1.0V
NO
Replace R496
YES
Replace IC410


R
IC413, pin-4
8V ±1.0V
NO
Replace R403
or IC406
YES
IC413, pin-11
–8V ±1.0V
NO
Replace R424
or IC407
YES
Replace IC413


17
DSP3 resister
NG
OK
DSP3 internal data memory
NG
OK
Replace IC330
DSP3 external data memory
NG
OK
Replace IC331, 332, 333
DSP3 interrupt1
NG
OK
IC370, pin-40 16kHz pulse
NO
YES
J
IC373, pin-18 16kHz pulse
NO
YES
Replace IC330
Replace IC373
DSP3 SIO1
DSP3 SIO1
NG
OK
IC370, pin-44 16kHz pulse (5V)
NO
YES
IC370, pin-3 2.048MHz (5V)
NO
YES
Replace IC330
J
DSP3 SIO2
DSP3 SIO2
NG
OK
IC370, pin-4 16kHz pulse (5V)
NO
YES
IC370, pin-43 1.024MHz (5V)
NO
YES
J
IC330, pin-76 1.024MHz (5V)
NO
YES
18
Replace IC330
Replace R379


18
DATAFLOW
NG
OK
Check the following signals triggered by IC370, pin-44
IC305, pin-8 waveform varys periodically in long terms
NO
Replace IC330
YES
Use the signal at IC305, pin-8 as the reference signal
IC305, pin-12 waveform varys periodically, which is the same as reference signal
NO
Replace IC305
YES
IC320, pin-61 waveform varys periodically, which is the same as reference signal
NO
Replace IC310
YES
IC305, pin-13 waveform varys periodically, which is the same as reference signal
NO
Replace IC320
YES
IC305, pin-7 waveform varys periodically, which is the same as reference signal
NO
Replace IC305
YES
Replace IC330
Check the entire system. Start checking from Audio NG (START) again


Q
Execute "mail*36,2e0d00060133!"
(sine wave signal output)
Note:
* indicates a space.
IC354, pin-4
16.0kHz
NO
YES
J
IC354, pin-16
16.0kHz
NO
YES
Replace IC354
IC354, pin-5
1.024MHz
NO
YES
J
IC354, pin-15
1.024MHz
NO
YES
Replace IC354
IC354, pin-3
8.192MHz
NO
YES
J
IC354, pin-17
8.192MHz
NO
YES
Replace IC354
Any signal exists
at IC354, pin-6
NO
YES
Replace IC330
Any signal exists
at IC354, pin-14
NO
YES
Replace IC354
IC400, pin-27
16.0kHz
NO
YES
Replace RB401
IC400, pin-28
1.024MHz
NO
YES
Replace RB401
Any signal exists
at IC400, pin-29
NO
YES
Replace RB401
Replace IC400

3-4. IF-664 BOARD

3-4-1. Outline of IF-664 Board Operation

3-4-1-1. System Outline

The IF-664 board is the communication interface board between the PCS-P300/P300P and the ISDN line, capable of housing one line. The basic function of the IF-664 board starts with the call control (connection and disconnection control to line) with other terminals. When the connection is established, the send signal is transmitted to the line and the receive singal is transmitted to the DPR-97 board where multiplexing and demultiplexing of video and audio signals are performed. The IF-664 board is designed to be used in USA/Canada (National ISDN,Custom ISDN), Europe (Euro ISDN), Australia and Japan where the ISDN line of each country and the 1B to 2B connections can be performed. The IF-664 board consists of the analog LINE block, CPU block, Time slot change block, TDM block, SIRCS interface block. Functions of each block are described below.

1) Analog LINE block
   There is an analog LINE of CN303 to IC200. The input singal from the modular jack(CN303) is level-shifted by transformer(T201,T202) and sent to IC200 of the secondary side. The signals (LTA,LTB,LRA,LRB) which are sent to the secondary side, are protected by the diodes(D200 to D211) from excessive voltage.

2) CPU block
   There is a system of IC200,IC201,IC202. The system of IC200,IC201,IC202 has the function of converting(driver/receiver function) the signal from the analog LINE block to the TTL level, call control with the ISDN network, controlling with host CPU and transfer of the send/receive signals with the DPR-97 board. The IC201 stores the firmware regarding the call control.

3) Time slot change block
   This block has 2 selectors(IC304,IC305). If 1B multiconnection is selected, the signals of B-channel (TBA, TBB, RBA, RBB) and clock(CK8K, CK64K) are different from normal connection path , because the time slot is different between normal connection and 1B multiconnection.

4) TDM block
   This block has a TDM ASIC(IC300). The function of this ASIC is that the signals from network (TBA, TBB, RBA, RBB,CK8K, CK64K) are multiplexed and sent to DPR-97 (TDMDX, TDMDR, TDMCK, TDMFS) board, the signals from DPR-97 board are demultiplexed and sent to CPU block. If PCS-I500(V.35) board is used, the signals from network to ASIC are replaced to SD,RD,ST,RT.

5) SIRCS interface block
   This block performs to decode the received SIRCS signal which in input to MB-748(CN302) board from the infra red receiver of the camera unit (PCS-C300/C300P), and encode the transmitting SIRCS signal which is output to MB-748(CN302) board for TV monitor set. After the SIRCS signal is received and decoded, it is sent to the host CPU via I/O port. IRQ1 is used for interrupt to the host CPU during SIRCS signal reception. The SIRCS signal which is encoded and transmitted, is set using the I/O port from the host CPU

6) Receive call detect block
   When call message is received from the network, the interrupt signal of receiving call detection is output to the TDM block, and its signal is a trigger of POWER ON activation for the processor. The port number which has received a call can be checked by the host CPU.

7) Memory check block

Write check of the RAM (IC202) is performed enabling to locate the cause of trouble whether the ROM (IC201) or the RAM is abnormal. The information that the RAM of which port is abnormal, can be notified of the host CPU.

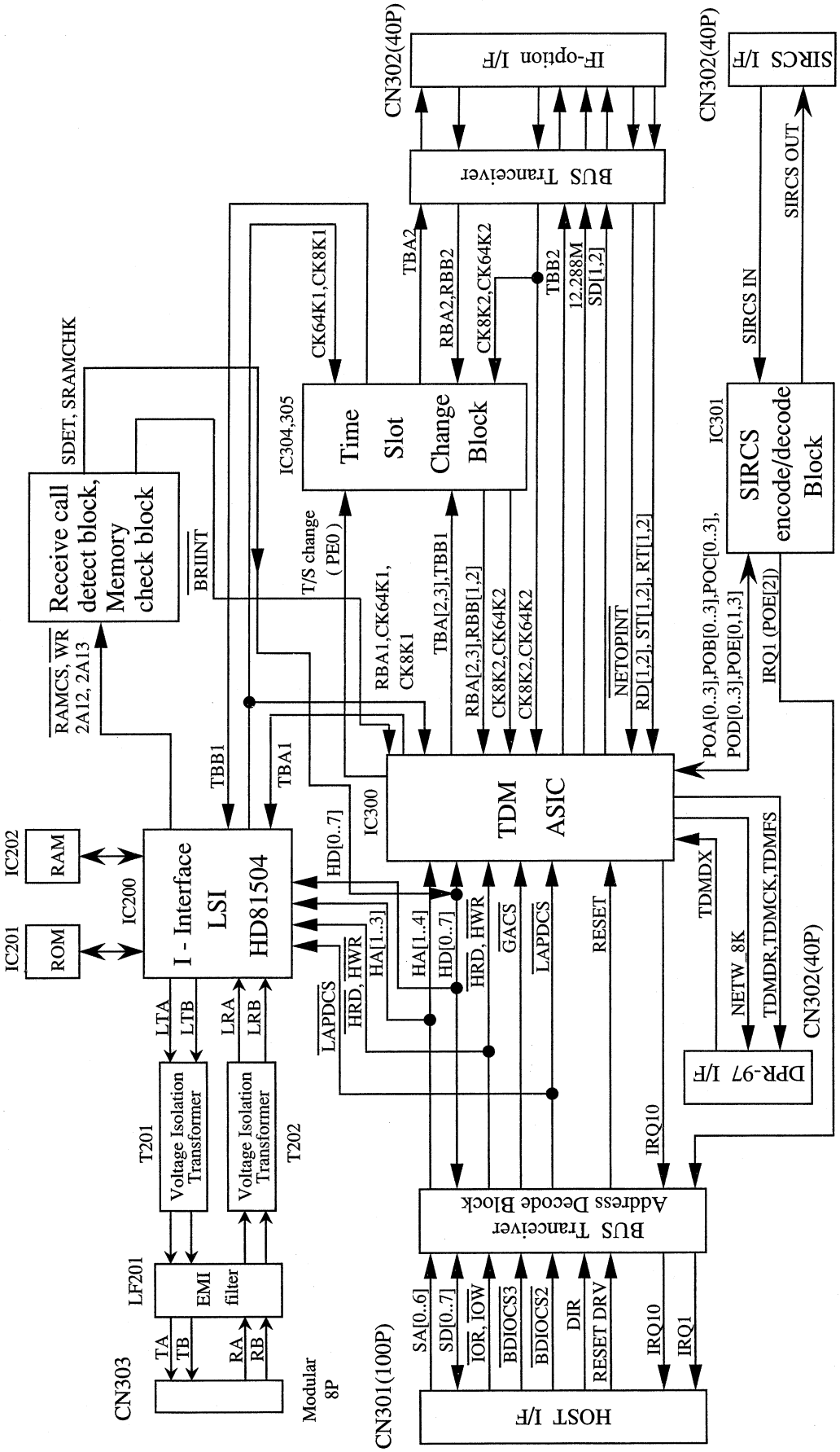


Fig. 3-4-1 IF-664 Board Block Diagram

3-4-2. IF-664 Board Troubleshooting

When any error occurs in the IF-664 board, use the flowchart as shown to locate the cause of the trouble.

[Equipment required]

- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Audio unit (PCS-A300)
  Remote commander (PCS-R500))
- Oscilloscope
- Video monitor
- Camera unit connection cable (supplied accessory)
- Audio unit connection cable (supplied accessory)

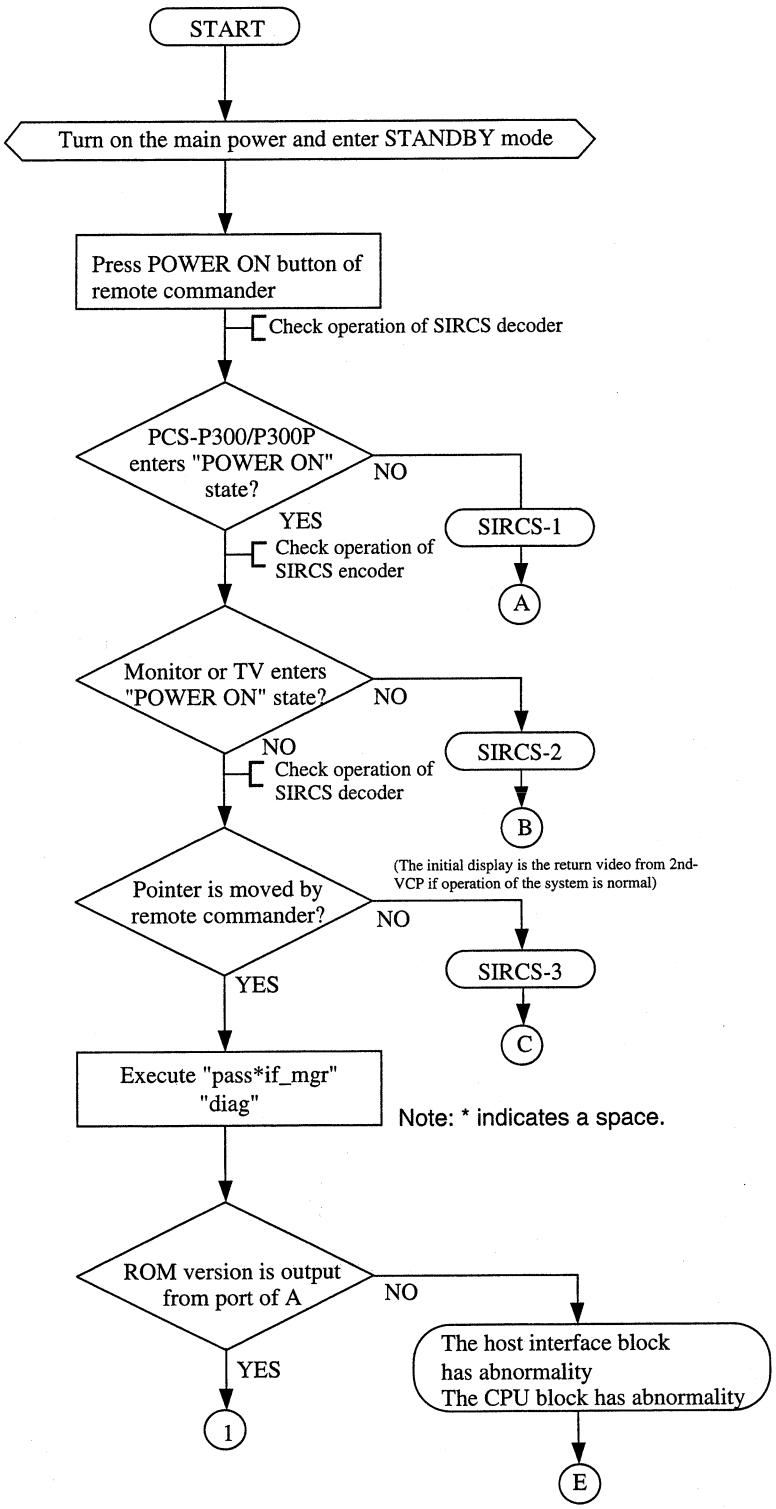
[Service tools]

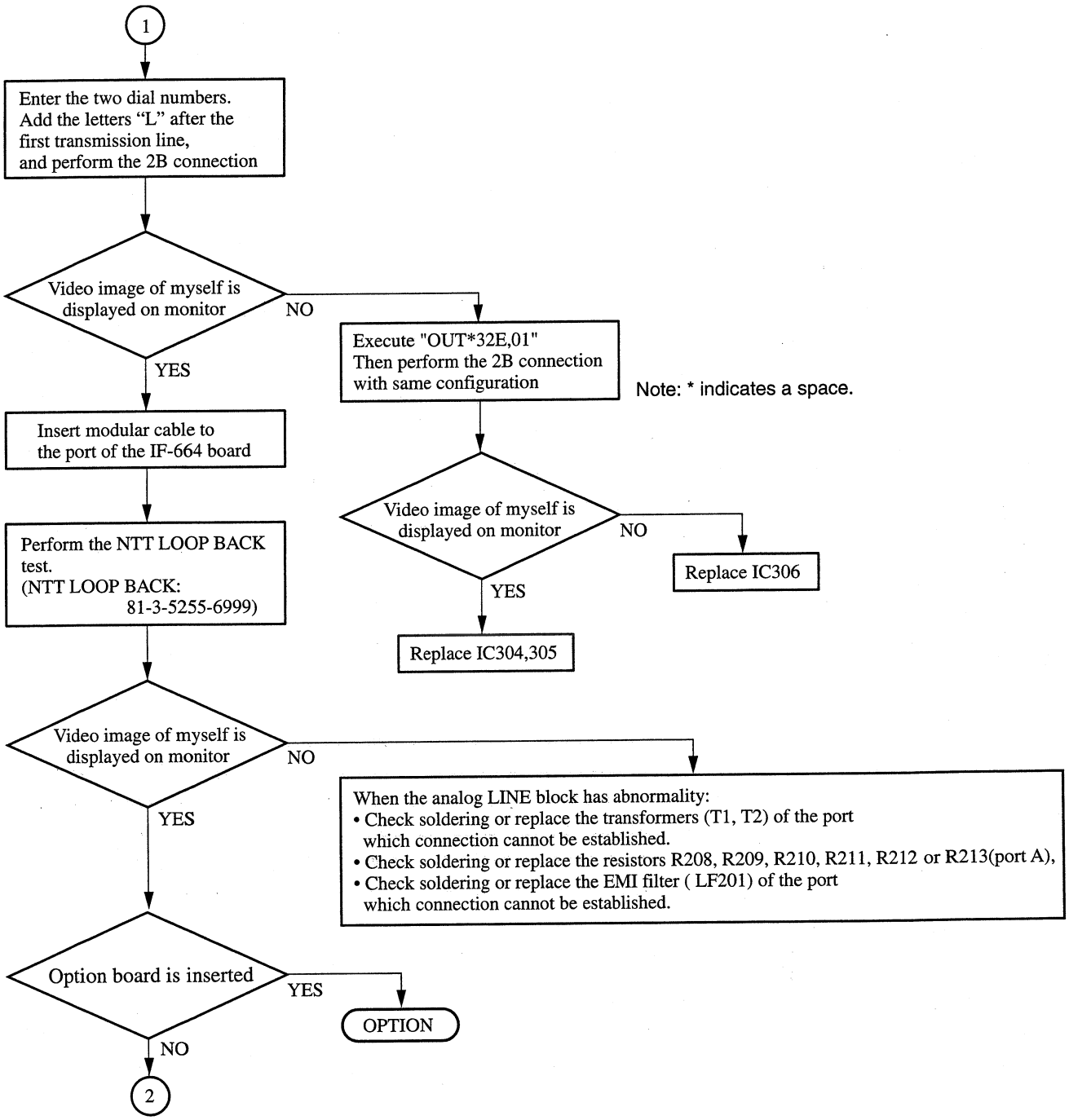
- VH-951 extension board (Sony part number: J-6389-951-A)
- RS-232C terminal (PC/AT compatible with communication software "CCT")
- RS-232C cross cable
- S cable
- ISDN (8P) modular cable
- Network-JIG
- PCS-K32
- IF-664A board (PCS-I300)
- IF-542 board (PCS-I500)

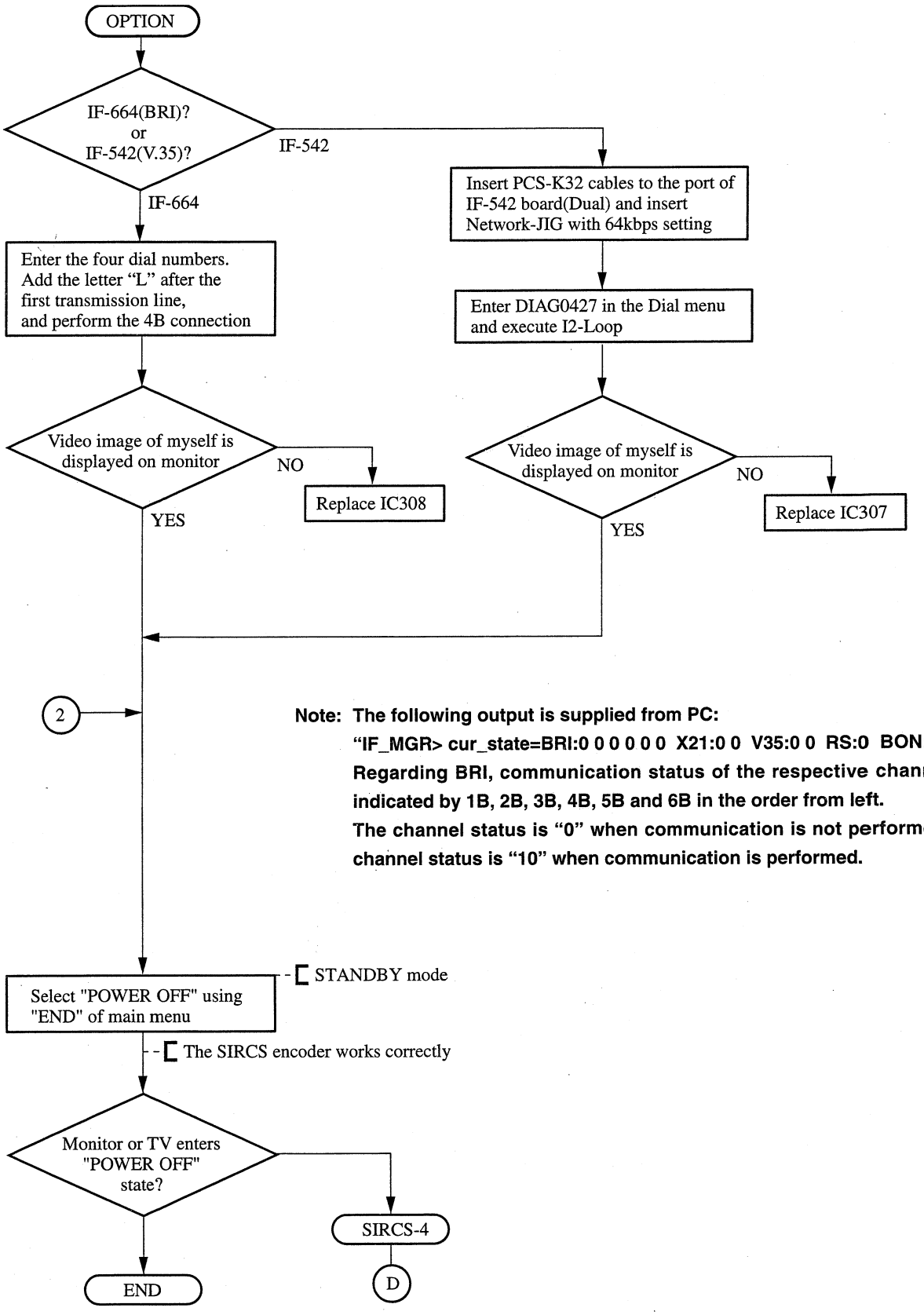
[Preparation]

1) Set up the PCS-3000/3000P system to the normal operating condition.
2) Insert the extension board to the slot of the IF-664 board.
3) Insert the IF-664 board to the extension board.
4) Connect the video monitor to the VIDEO OUT MONITOR terminal of the rollabout processor (PCS-P300/P300P).
5) Connect the RS-232C terminal (to be abbreviated simply as terminal hereafter) to the AUX CONTROL terminal of the rollabout processor (PCS-P300/P300P).
6) Remove all ISDN (8 pins) modular cables. The modular cables to use must be assured of good performance.
7) Start up the communication software "CCT" which is installed in the terminal. Turn on the main power of the PCS-3000/3000P system (enter the debug mode).
8) Turn on the main power from the remote commander (PCS-R500).

[Flowchart]

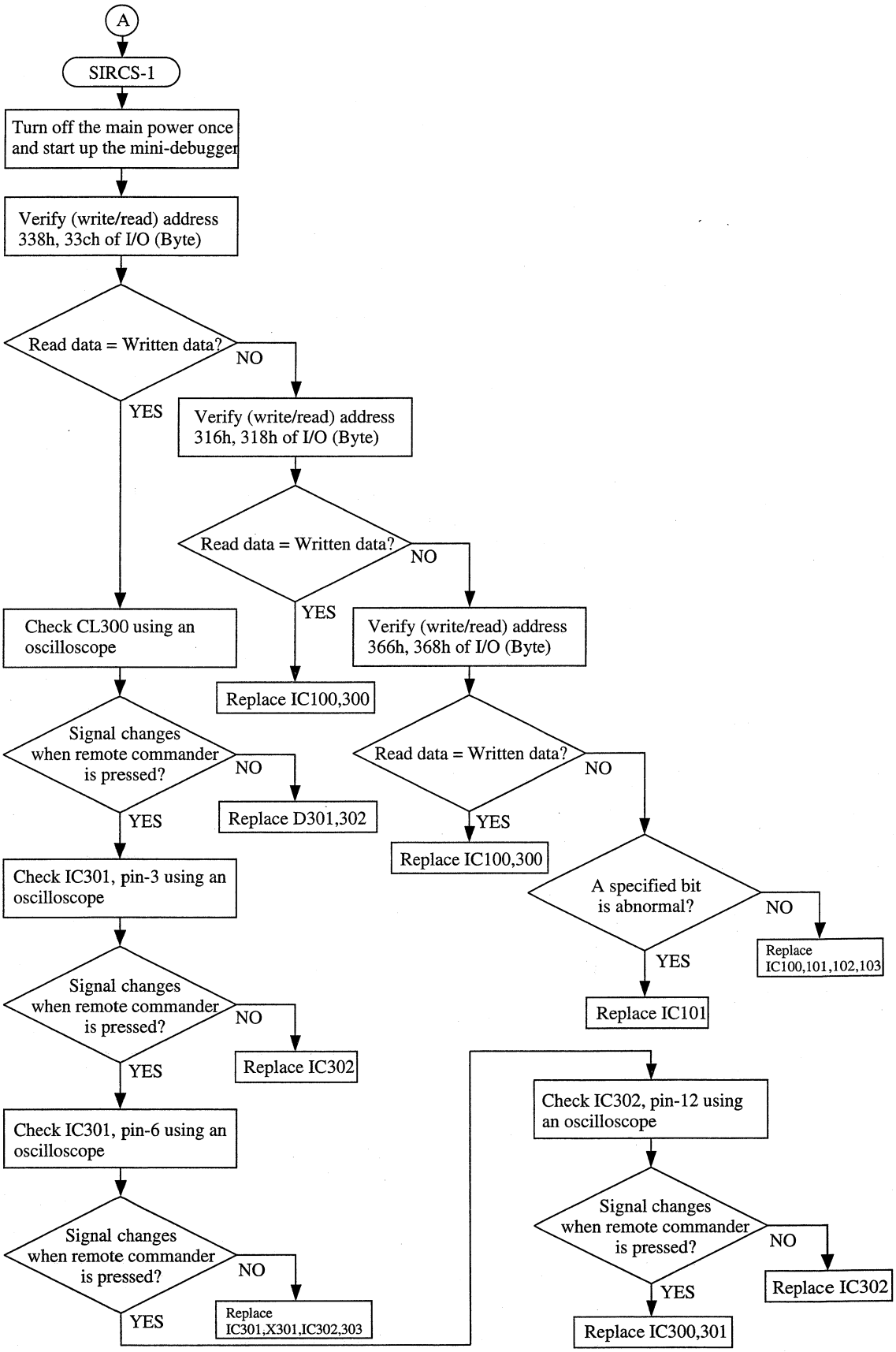

START
Turn on the main power and enter STANDBY mode
Press POWER ON button of remote commander
Check operation of SIRCS decoder
PCS-P300/P300P enters "POWER ON" state?
NO
YES
Check operation of SIRCS encoder
SIRCS-1
A
Monitor or TV enters "POWER ON" state?
NO
NO
Check operation of SIRCS decoder
SIRCS-2
B
Pointer is moved by remote commander?
(The initial display is the return video from 2nd-VCP if operation of the system is normal)
NO
YES
SIRCS-3
C
Execute "pass*if_mgr" "diag"
Note: * indicates a space.
ROM version is output from port of A
NO
YES
The host interface block has abnormality
The CPU block has abnormality
1
E

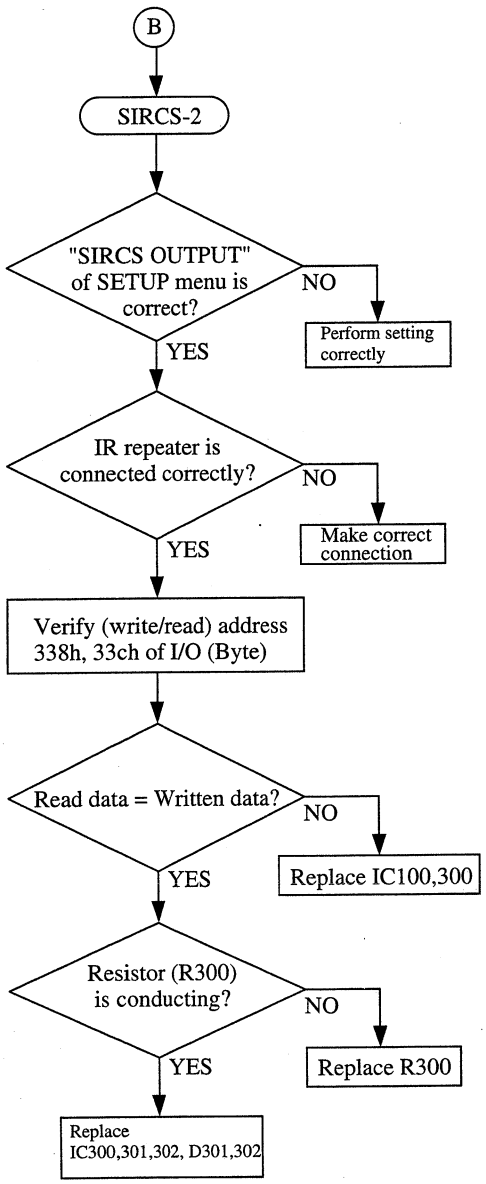

1
Enter the two dial numbers.
Add the letters "L" after the
first transmission line,
and perform the 2B connection
Video image of myself is
displayed on monitor
NO
YES
Execute "OUT*32E,01"
Then perform the 2B connection
with same configuration
Note: * indicates a space.
Insert modular cable to
the port of the IF-664 board
Video image of myself is
displayed on monitor
NO
Replace IC306
YES
Replace IC304,305
Perform the NTT LOOP BACK
test.
(NTT LOOP BACK:
81-3-5255-6999)
Video image of myself is
displayed on monitor
NO
When the analog LINE block has abnormality:
• Check soldering or replace the transformers (T1, T2) of the port
which connection cannot be established.
• Check soldering or replace the resistors R208, R209, R210, R211, R212 or R213(port A),
• Check soldering or replace the EMI filter (LF201) of the port
which connection cannot be established.
YES
Option board is inserted
YES
OPTION
NO
2

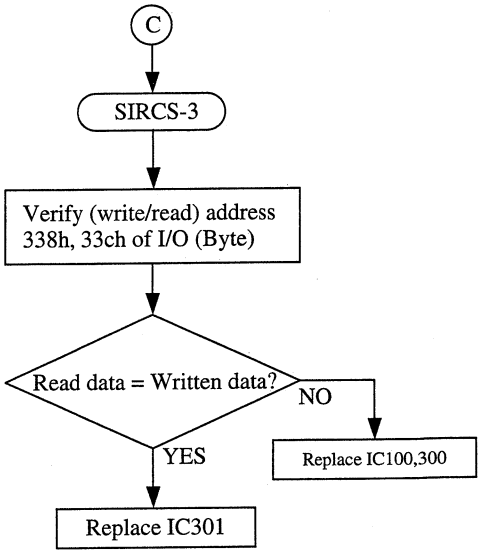


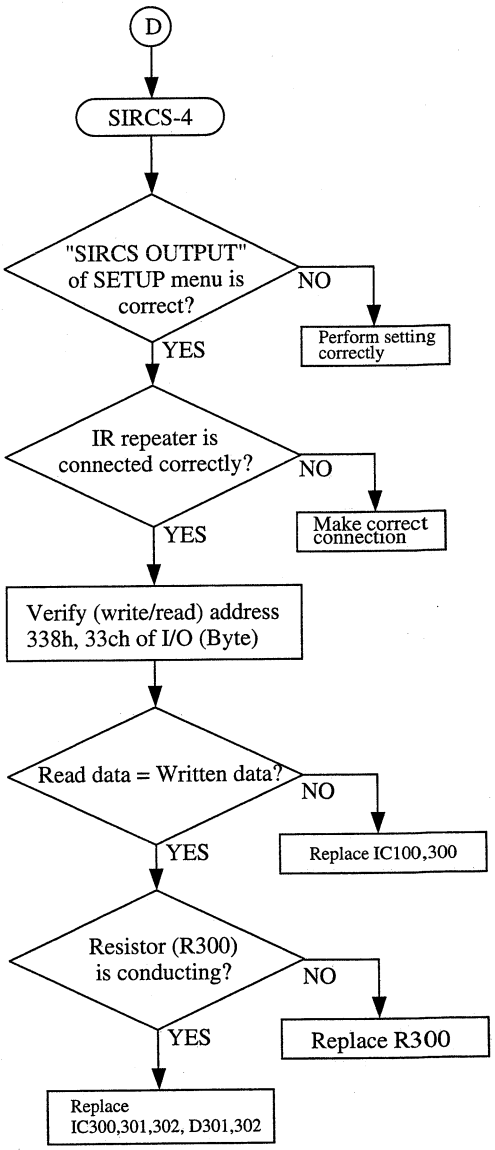
Note: The following output is supplied from PC:
"IF_MGR> cur_state=BRI:0 0 0 0 0 0 X21:0 0 V35:0 0 RS:0 BON:0"
Regarding BRI, communication status of the respective channels are indicated by 1B, 2B, 3B, 4B, 5B and 6B in the order from left.
The channel status is "0" when communication is not performed. The channel status is "10" when communication is performed.

SIRCS interface block has abnormality

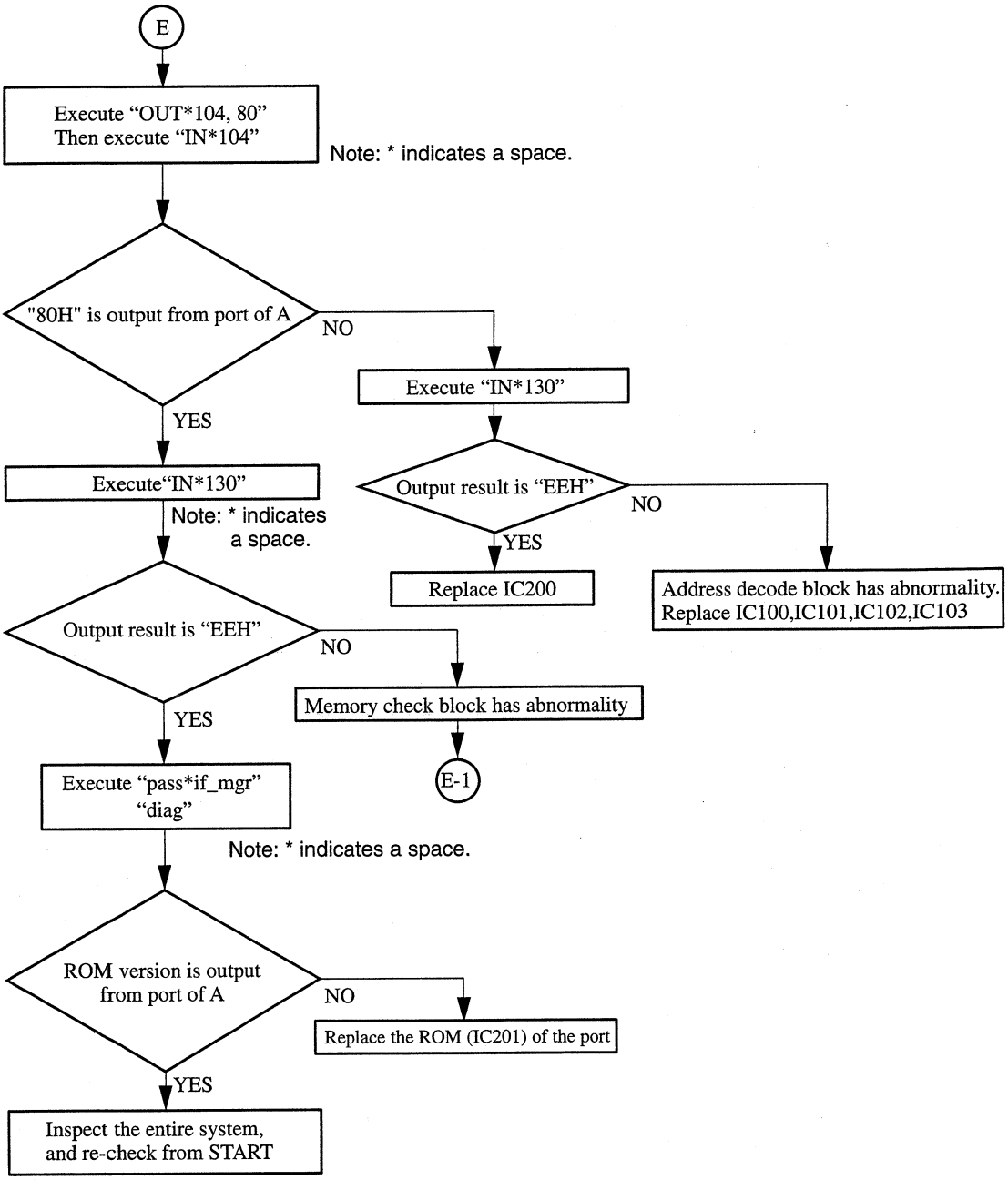


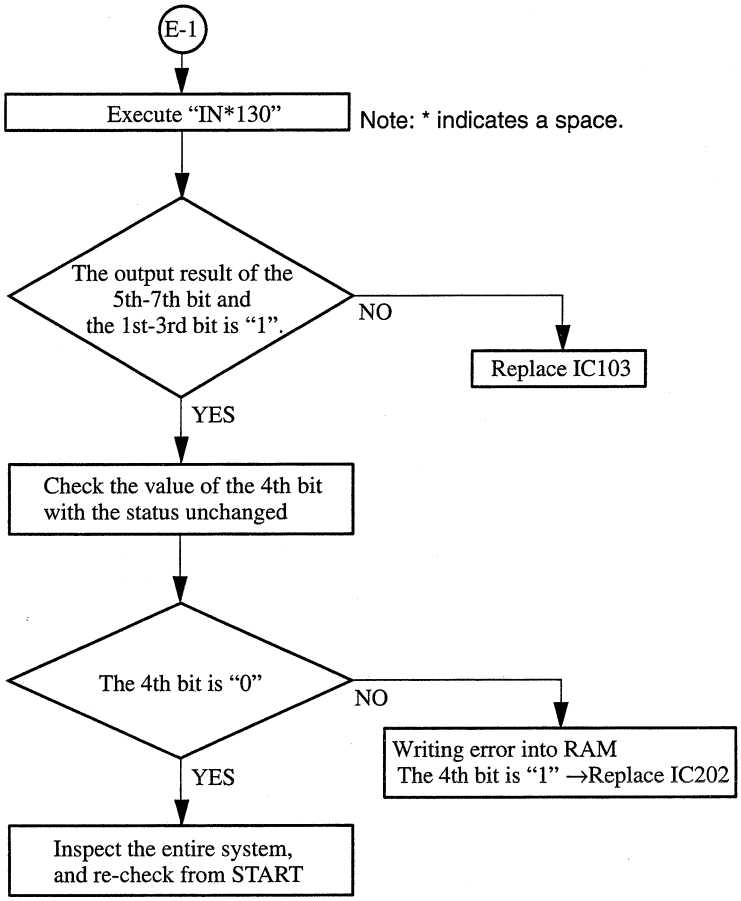

B
SIRCS-2
"SIRCS OUTPUT" of SETUP menu is correct?
NO
Perform setting correctly
YES
IR repeater is connected correctly?
NO
Make correct connection
YES
Verify (write/read) address 338h, 33ch of I/O (Byte)
Read data = Written data?
NO
Replace IC100,300
YES
Resistor (R300) is conducting?
NO
Replace R300
YES
Replace IC300,301,302, D301,302


C
SIRCS-3
Verify (write/read) address 338h, 33ch of I/O (Byte)
Read data = Written data?
NO
Replace IC100,300
YES
Replace IC301


D
SIRCS-4
"SIRCS OUTPUT" of SETUP menu is correct?
NO
Perform setting correctly
YES
IR repeater is connected correctly?
NO
Make correct connection
YES
Verify (write/read) address 338h, 33ch of I/O (Byte)
Read data = Written data?
NO
Replace IC100,300
YES
Resistor (R300) is conducting?
NO
Replace R300
YES
Replace IC300,301,302, D301,302

Host interface block or CPU block has abnormality




E-1
Execute "IN*130"
Note: * indicates a space.
The output result of the 5th-7th bit and the 1st-3rd bit is "1".
NO
Replace IC103
YES
Check the value of the 4th bit with the status unchanged
The 4th bit is "0"
NO
Writing error into RAM
The 4th bit is "1" →Replace IC202
YES
Inspect the entire system, and re-check from START

3-5. IF-664A BOARD (PCS-I300)

3-5-1. System Outline

The IF-664A board (PCS-I300) is the communication interface board between the PCS-P300/P300P and the ISDN line, capable of housing one line. The basic function of the IF-664A board starts with the call control (connection and disconnection control to line) with other terminals. When the connection is established, the send signal is transmitted to the line and the receive singal is transmitted to the IF-664 board where multiplexing and demultiplexing of video and audio signals are performed. The IF-664A board is also designed to be used in USA/Canada (National ISDN,Custom ISDN), Europe (Euro ISDN), Australia and Japan where the ISDN line of each country and the 1B to 2B connections can be performed. If IF-664A board is used with IF-664 board, multi channel connections from 1B to 4B can be performed. The IF-664 board consists of the analog LINE block, CPU block, Receive call detect block and Memory check block. The functions of these blocks are quite same to IF-664 board. Functions of each block are described below.

1) Analog LINE block
   There is an analog LINE of CN303 to IC200. The input singal from the modular jack (CN303) is level-shifted by transformer (T201,T202) and sent to IC200 of the secondary side. The signals (LTA, LTB, LRA, LRB) which are sent to the secondary side, are protected by the diodes (D200 to D211) from excessive voltage.

2) CPU block
   There is a system of IC200, IC201, IC202. The system of IC200, IC201, IC202 has the function of converting (driver/receiver function) the signal from the analog LINE block to the TTL level, call control with the ISDN network, controlling with host CPU and transfer of the send/receive signals with the DPR-97 board. The IC201 stores the firmware regarding the call control.

3) Receive call detect block
   When call message is received from the network, the interrupt signal of receiving call detection is output to the IF-664 board, and its signal is a trigger of POWER ON activation for the processor. The port number which has received a call can be checked by the host CPU.

4) Memory check block
   Write check of the RAM (IC202) is performed enabling to locate the cause of trouble whether the ROM (IC201) or the RAM is abnormal. The information that the RAM of which port is abnormal, can be notified of the host CPU.

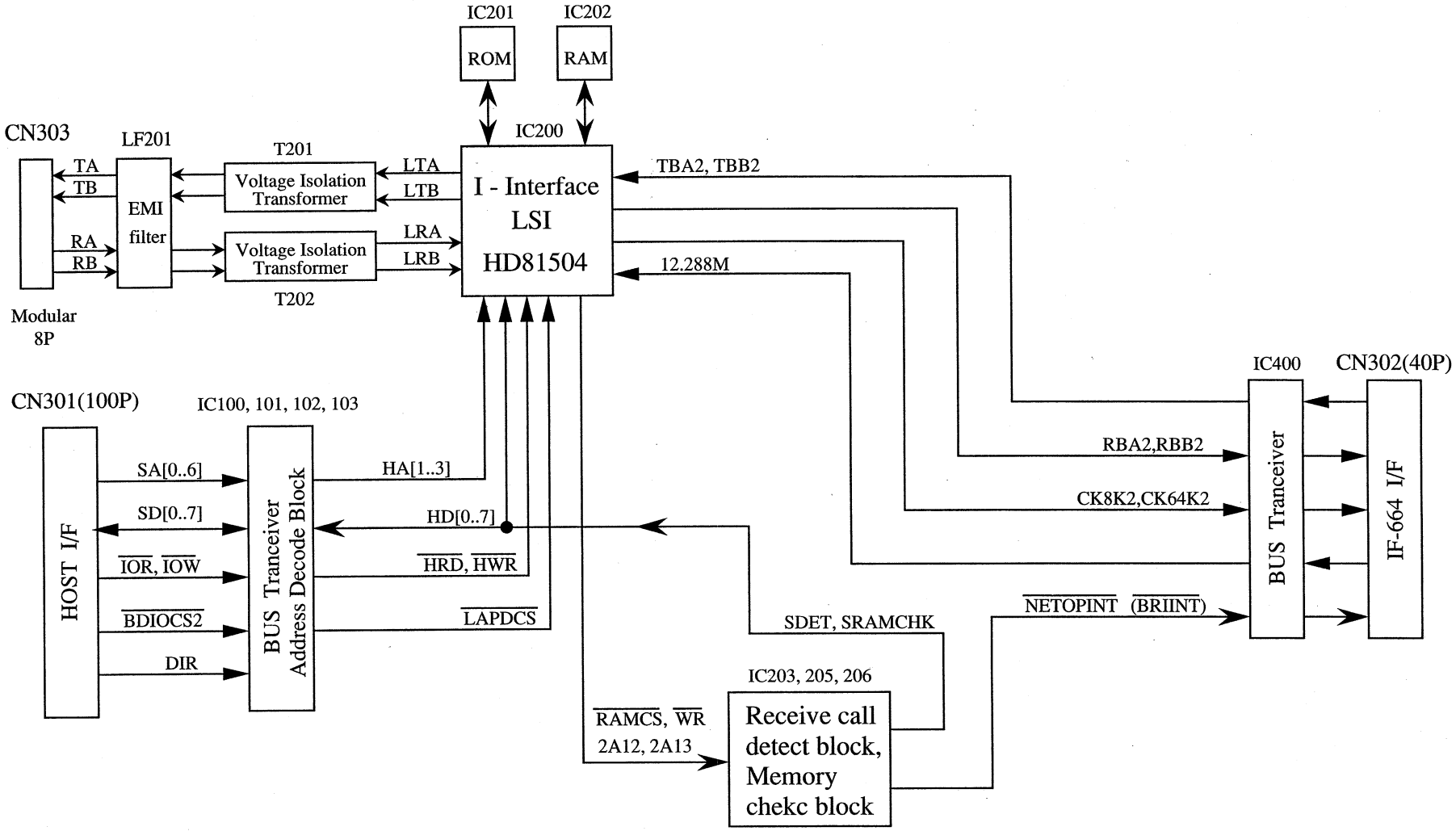


Fig. 3-5-1. Appendix : PCS-I300 (IF-664A Board) Block Diagram

3-5-2. IF-664A Board (PCS-I300) Troubleshooting

When any error occurs in the IF-664A board (PCS-I300), use the flowchart as shown to locate the cause of the trouble.

[Equipment required]

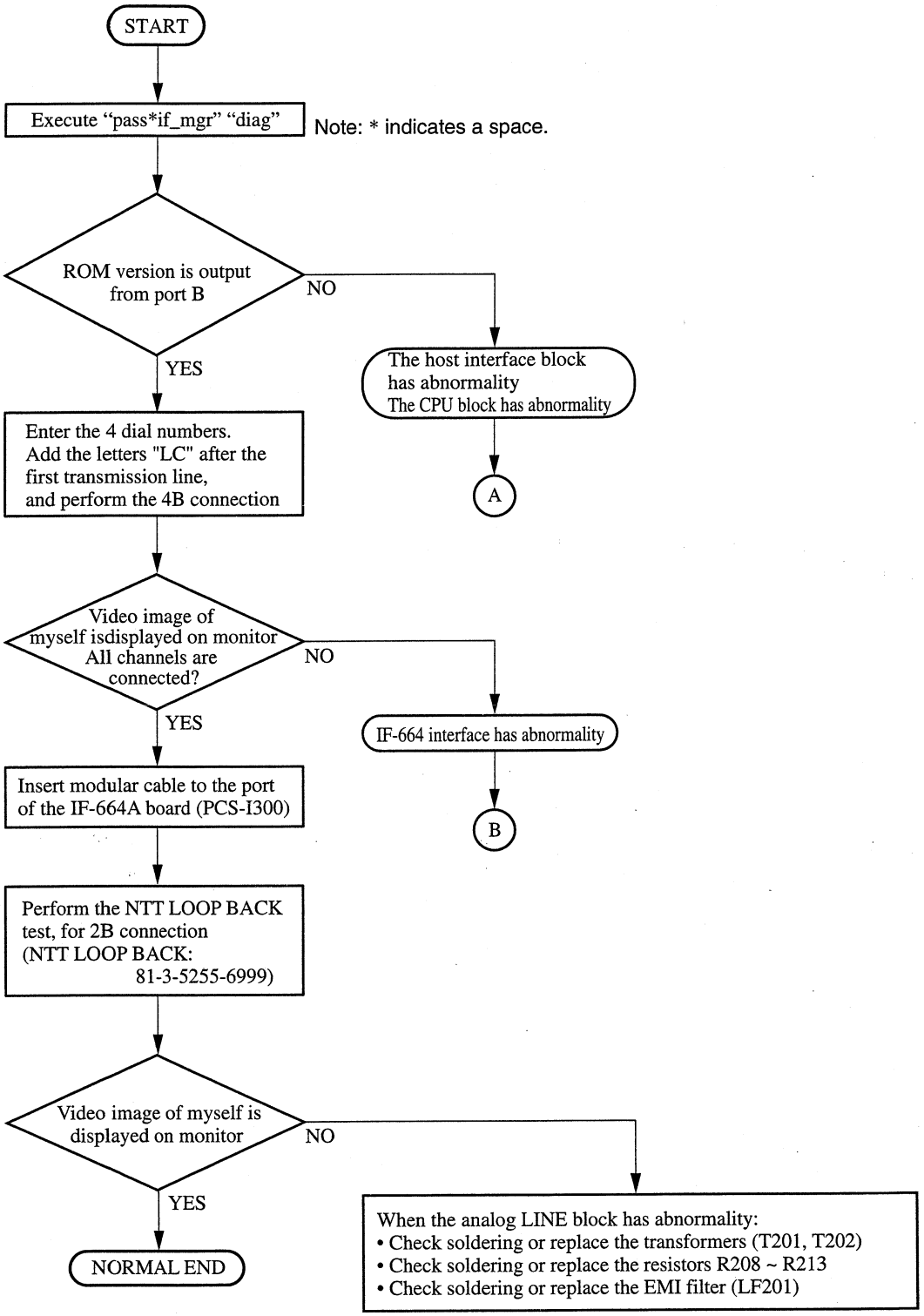
- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Microphone (PCS-A300)
  Remote commander (PCS-R500))
- Oscilloscope
- Video monitor
- Camera unit connection cable (supplied accessory)

[Service tools]

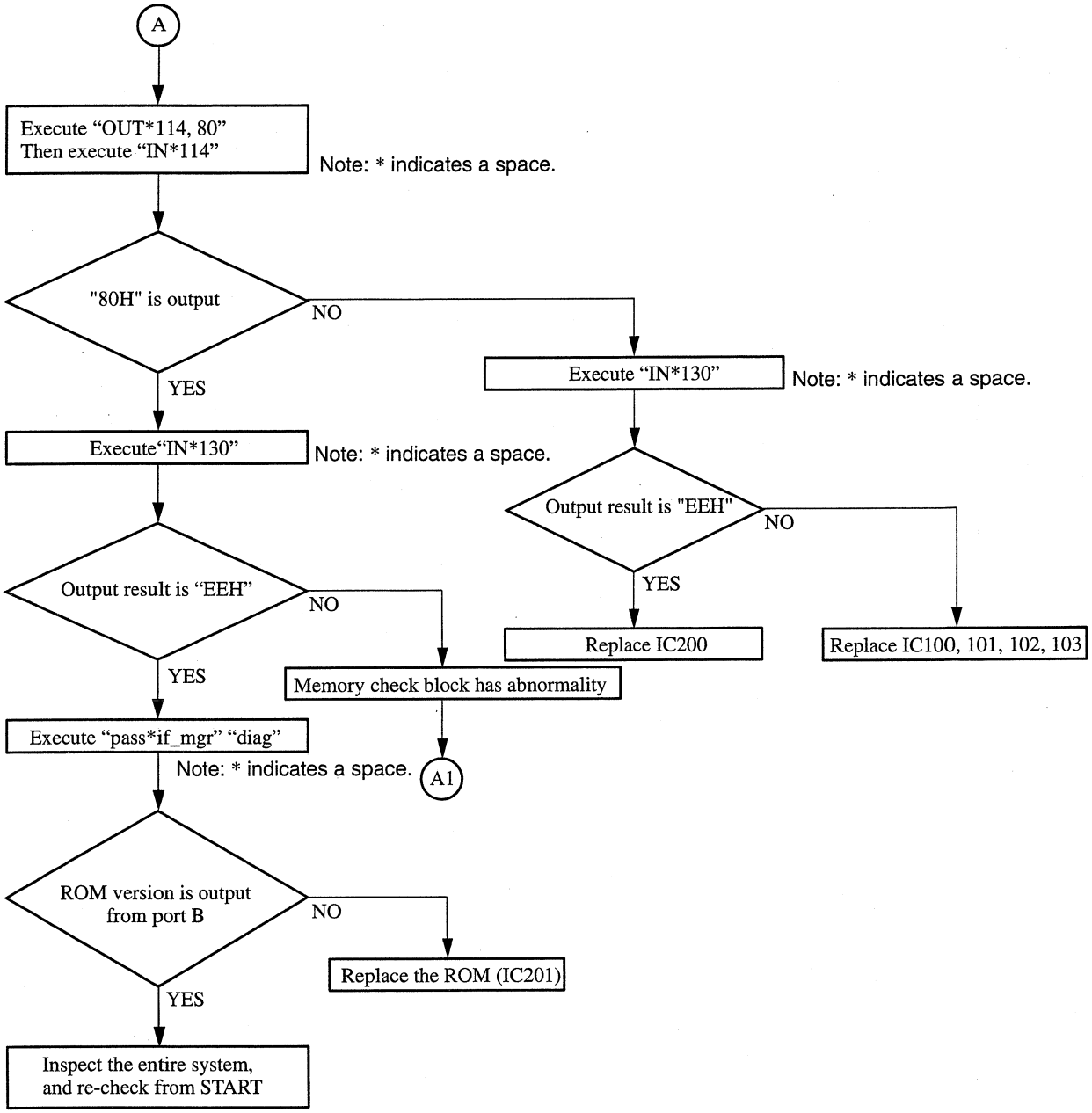
- VH-962 extension board (Sony part number: J-6389-620-A)
- RS-232C terminal (PC/AT compatible with communication software "CCT")
- RS-232C cross cable
- S cable
- ISDN (8P) modular cable

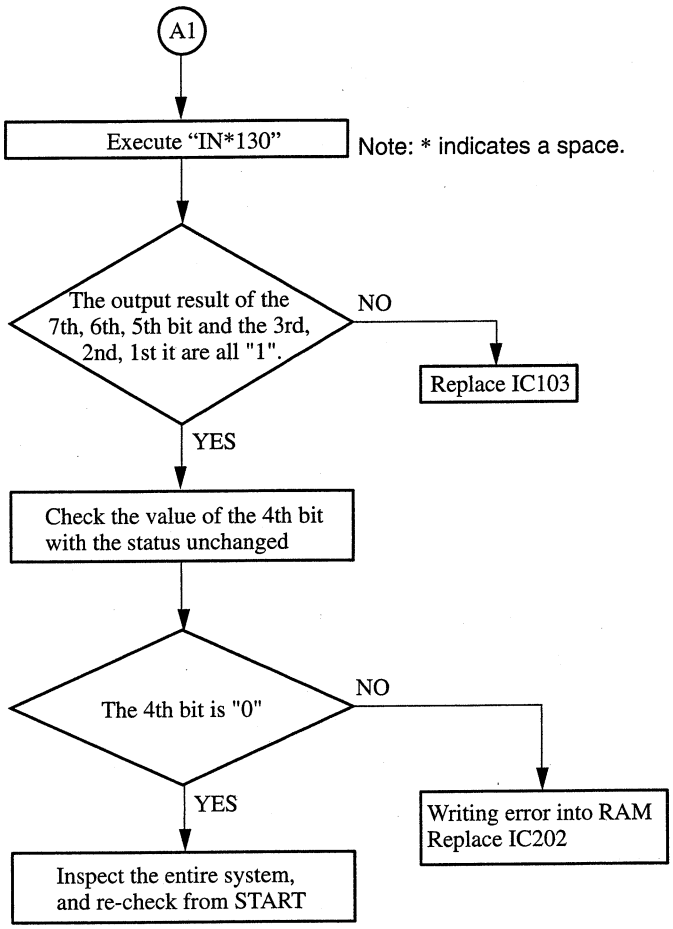
[Preparation]

1) Set up the PCS-3000/3000P system to the normal operating condition.
2) Insert the extension board to the slot of the IF-664A board (PCS-I300).
3) Insert the IF-664A board (PCS-I300) to the extension board.
4) Connect the video monitor to the VIDEO OUT MONITOR terminal of the rollabout processor (PCS-P300/P300P).
5) Connect the RS-232C terminal (to be abbreviated simply as terminal hereafter) to the AUX CONTROL terminal of the rollabout processor (PCS-P300/P300P).
6) Remove all ISDN (8 pins) modular cables. The modular cables to use must be assured of good performance.
7) Start up the communication software "CCT" which is installed in the terminal. Turn on the main power of the PCS-3000/3000P system (enter the debug mode).
8) Turn on the main power from the remote commander (PCS-R500).

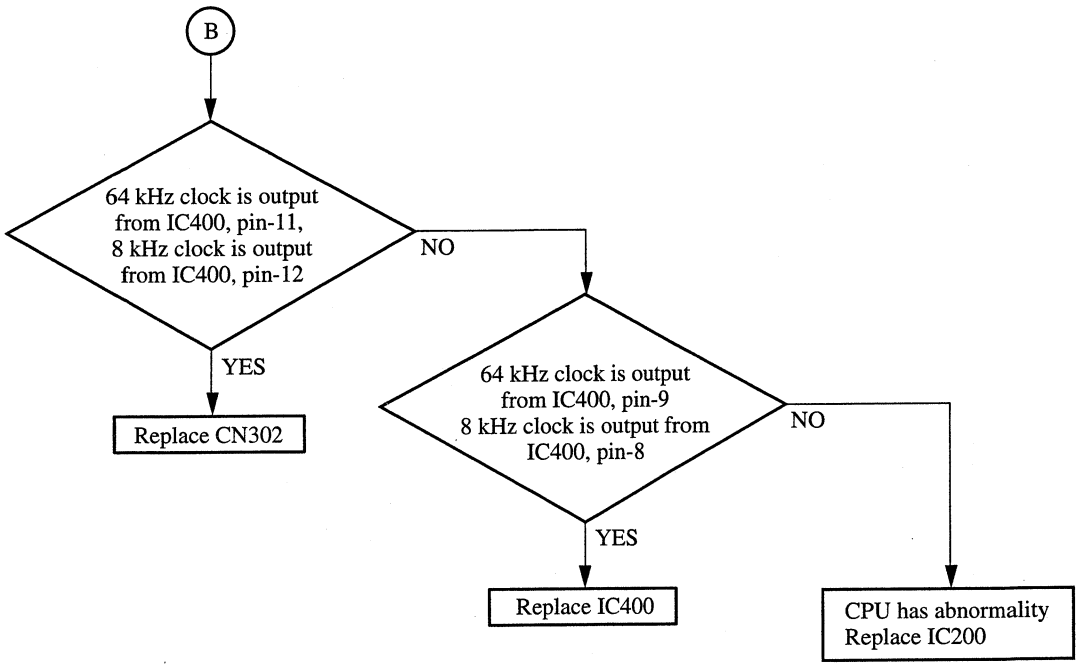

START
Execute "pass*if_mgr" "diag"
Note: * indicates a space.
ROM version is output from port B
NO
YES
The host interface block has abnormality
The CPU block has abnormality
A
Enter the 4 dial numbers.
Add the letters "LC" after the first transmission line,
and perform the 4B connection
Video image of myself isdisplayed on monitor
All channels are connected?
NO
YES
IF-664 interface has abnormality
B
Insert modular cable to the port of the IF-664A board (PCS-I300)
Perform the NTT LOOP BACK test, for 2B connection
(NTT LOOP BACK:
81-3-5255-6999)
Video image of myself is displayed on monitor
NO
YES
NORMAL END
When the analog LINE block has abnormality:
• Check soldering or replace the transformers (T201, T202)
• Check soldering or replace the resistors R208 ~ R213
• Check soldering or replace the EMI filter (LF201)

1. Host interface block or CPU block has abnormality




A1
Execute "IN*130"
Note: * indicates a space.
The output result of the 7th, 6th, 5th bit and the 3rd, 2nd, 1st it are all "1".
NO
Replace IC103
YES
Check the value of the 4th bit with the status unchanged
The 4th bit is "0"
NO
YES
Writing error into RAM
Replace IC202
Inspect the entire system, and re-check from START

2. IF-664 interface has abnormality



SECTION 4
ELECTRICAL ALIGNMENT

4-1. DPR-97 BOARD ADJUSTMENT

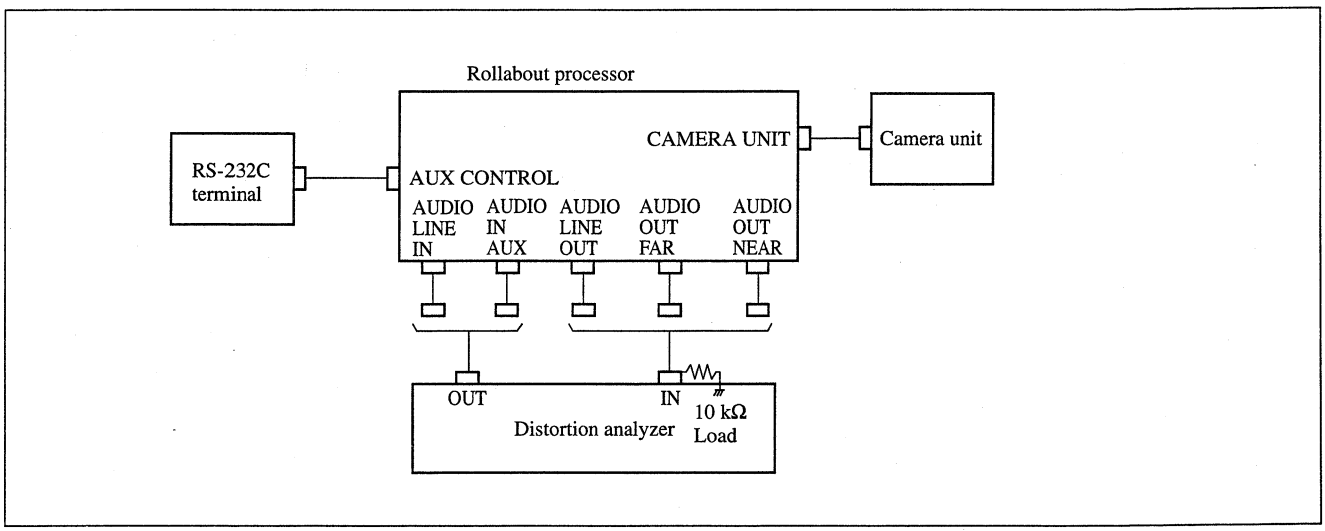
[Equipment required]

- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Remote commander (PCS-R500))
- Distortion analyzer (AA501A/Tektronix or equivalent)

[Service tools]

- VH-962 extension board (Sony part number: J-6389-620-A)
- RS-232C terminal (PC/AT compatible machine with communication software "CCT")
- RS-232C cross cable
- Pin plug cord

[Connection]



[Preparation]

1) Insert the extension board to the slot of the DPR-97 board.
2) Insert the DPR-97 board to the extension board.
3) Connect the camera unit (PCS-C300/C300P) to the rollabout processor (PCS-P300/P300P) and perform setups for normal operating condition.
4) Make connection as shown in the previous page, and connect a 10 kΩ load to the input connector of the distortion analyzer.
5) Start up the communication software "CCT" which is installed in the RS-232C terminal, then turn on the main power of the PCS-3000/3000P system.
6) Turn on the power from the remote commander (PCS-R500).
7) Input "debug*pcsdebug", "mail*36,2e0e00051a!", "mail*36,2e0d00060000!" from the RS-232C terminal. (The mark * indicates a space.)

4-1-1. DA1, DA2 Output Level Adjustment

Adjustment condition	Specification	Adjustment point
step 1 • Input "mail*36,2e0d00060133!" from the RS-232C terminal.	• DA1 adjustment AUDIO OUT FAR • DA2 adjustment AUDIO OUT NEAR < adjustment > level = 0±0.1 dBu < check > distortion = –50 dB (0.3 %) or less	• DA1 adjustment RV402/DPR-97 (K-4) • DA2 adjustment RV403/DPR-97 (K-5)
	< check > AUDIO LINE OUT level = 0±1 dBu distortion = –50 dB (0.3 %) or less	
step 2 • Input "mail*36,2e0d00060100!" from the RS-232C terminal.	< check > Confirm that the outputs at the above measurement points are –47 dBu or less respectively.	

Note: The mark * indicates a space.

4-1-2. AD1 Input Level Adjustment

Adjustment condition	Specification	Adjustment point
• Input "mail*36,2e0d00060110!" from the RS-232C terminal.	< check > AUDIO OUT NEAR level = –47 dBu or less	
• Connect a distortion analyzer to the AUDIO LINE IN, and input the sine-wave signal of 1 kHz at 0 ±0.1 dBu.	AUDIO OUT NEAR < adjustment > level = 0±0.1 dBu < check > distortion = –46 dB (0.5 %) or less	RV401/DPR-97 (L-4)

Note: The mark * indicates a space.

4-1-3. AD2 Input Level Adjustment

Adjustment condition	Specification	Adjustment point
• Input "mail*36,2e0d00060120!" from the RS-232C terminal.	< check > AUDIO OUT NEAR level = –47 dBu or less	
• Connect a distortion analyzer to the AUDIO IN AUX, and input the sine-wave signal of 1 kHz at 0 ±0.1 dBu.	AUDIO OUT FAR < adjustment > level = 0±0.1 dBu < check > distortion = –46 dB (0.5 %) or less	RV404/DPR-97 (K-4)

Note: The mark * indicates a space.

4-1-4. AUDIO OUT NEAR/FAR–AUDIO IN AUX Analog Check

Adjustment condition	Specification	Adjustment point
< AUDIO OUT NEAR Check > • Connect the AUDIO OUT NEAR and AUDIO IN AUX using a pin plug cord. • Input "mail*36,2e0d00060600!" from the RS-232C terminal. < AUDIO OUT FAR Check > • Connect the AUDIO OUT FAR and AUDIO IN AUX using a pin plug cord. • Input "mail*36,2e0d00060601!" from the RS-232C terminal.	Indication on the RS-232C terminal Specifications (reference values) Frequency / Level (not shown) 333 Hz: 0.5±1.0 dBu 1 kHz: 0.5±0.5 dBu 2 kHz: 0.5±1.0 dBu 6 kHz: 0.5±2.0 dBu 7 kHz: –1.0±2.0 dBu 7.67 kHz: –5.5±3.0 dBu 1 kHz (CPU MUTE): –42.5 dBu or less 1 kHz (DSP MUTE): –42.5 dBu or less Noise: –46.5 dBu or less • OK or NG judgment result appears on the RS-232C terminal. < reference > • The AUDIO IN AUX signal is output to either AUDIO OUT NEAR or FAR (which is not connected with the AUDIO IN AUX connector using the pin plug cord) so that the output can be monitored.	

Note: The mark * indicates a space.

4-1-5. AUDIO LINE OUT–LINE IN Analog Check

Adjustment condition	Specification	Adjustment point
< AUDIO LINE IN Check > • Connect the AUDIO LINE OUT and AUDIO LINE IN using a pin plug cord. • Input "mail*36,2e0d00060606!" from the RS-232C terminal. Notice:Don't input any signal to MIC1 and MIC2.	Indication on the RS-232C terminal Specifications (reference values) Frequency / Level (not shown) 333 Hz: 0.5±2.0 dBu 1 kHz: 0.5±1.5 dBu 2 kHz: 0.5±2.0 dBu 6 kHz: 0.5±3.0 dBu 7 kHz: –1.0±3.0 dBu 7.67 kHz: –5.5±4.0 dBu 1 kHz (CPU MUTE): –42.5 dBu or less Noise: –46.5 dBu or less • OK or NG judgment result appears on the RS-232C terminal. < reference > • The AUDIO LINE IN signal is output to the AUDIO OUT NEAR so that the output can be monitored.	

Note: The mark * indicates a space.

4-1-6. AUDIO LINE OUT–MIC1, 2 Analog Check

<table>
<tr><th>Adjustment condition</th><th>Specification</th><th>Adjustment point</th></tr>
<tr><td>< MIC1 Check >
• Connect the AUDIO LINE OUT and MIC1 via 100 kΩ ±1% using a pin plug cord.
• Input "mail*36,2e0d00060607!" from the RS-232C terminal.
< MIC2 Check >
• Connect the AUDIO LINE OUT and MIC2 via 100 kΩ ±1% using a pin plug cord.
• Input "mail*36,2e0d00060607!" from the RS-232C terminal.
Notice:Don't input any signal to AUDIO LINE IN and MIC which is not checking.</td><td>Indication on the RS-232C terminal

Specifications (reference values)
<table><tr><th>Frequency</th><th>Level (not shown)</th></tr><tr><td>333 Hz</td><td>1.5±3.0 dBu</td></tr><tr><td>1 kHz</td><td>1.5±2.5 dBu</td></tr><tr><td>2 kHz</td><td>1.5±3.0 dBu</td></tr><tr><td>6 kHz</td><td>1.5±4.0 dBu</td></tr><tr><td>7 kHz</td><td>0.0±4.0 dBu</td></tr><tr><td>7.67 kHz</td><td>–4.5±5.0 dBu</td></tr><tr><td>1 kHz (CPU MUTE)</td><td>–41.5 dBu or less</td></tr><tr><td>Noise</td><td>–45.5 dBu or less</td></tr></table>• OK or NG judgment result appears on the RS-232C terminal.
< reference >
• The MIC1 and MIC2 signals are output to AUDIO OUT NEAR so that the output can be monitored.</td><td></td></tr>
</table>

Note: The mark * indicates a space.

4-2. DAD-31/31P BOARD ADJUSTMENT

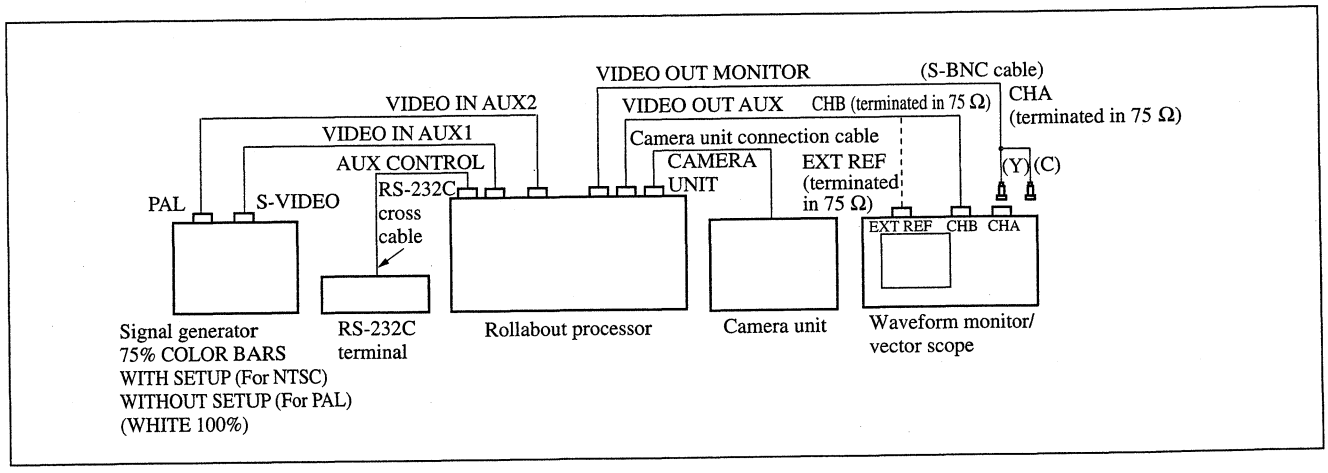
[Equipment required]

- PCS-3000/3000P system
  (Rollabout processor (PCS-P300/P300P)
  Camera unit (PCS-C300/C300P)
  Remote commander (PCS-R500))
- Signal generator (Tektronix TSG130A for NTSC, TSG131A for PAL or equivalent)
- Waveform monitor/vector scope (Tektronix 1780 for NTSC, 1781 for PAL or equivalent)
- Frequency counter (Advantest TR5821A or equivalent)
- Camera unit connection cable (supplied accessory)

[Service tools]

- VH-962 extension board (Sony part number: J-6389-620-A)
- S-BNC video cable (Sony part number: J-6381-380-A)
- S cable
- RS-232C terminal (PC/AT compatible machine with communication software "CCT")
- RS-232C cross cable

[Connection]



[Preparation]

1) Connect the camera unit (PCS-C300/C300P) to the rollabout processor (PCS-P300/P300P) and perform setups for normal operating condition.
2) Insert the extension board to the slot of the DAD-31/31P board.
3) Insert the DAD-31/31P board to the extension board.
4) Make connection as shown above.
5) Start up the communication software "CCT" which is installed in the RS-232C terminal, then turn on the main power of the PCS-3000/3000P system.
6) Turn on the main power from the remote commander (PCS-R500).

[Command list for DAD-31/31P board adjustment]

The following commands must be input from the RS-232C terminal in the following adjustment procedure.
(↵ indicates execution and * indicates a space.)

Command A: debug*pcsdebug
out*2a0, f5↵
pass*39↵
vcp*1↵
vcx_dwSONYTestSig*3 (NTSC), vcx_dwSONYTestSig*5 (PAL)↵
vcx_dwVidProgramUpdateFlag*1↵

Command B: vcx_dwSONYTestSig*15↵
vcx_dwVidProgramUpdateFlag*1↵
exit↵

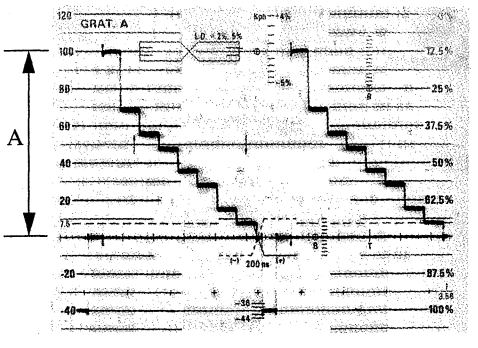
Command C: out*2a0, ff↵

4-2-1. DAD-31 Board Adjustment (PCS-P300)

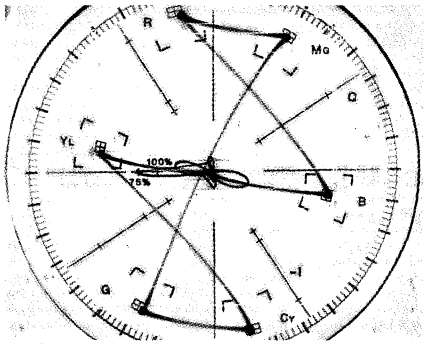
4-2-1-1. PCLK Frequency Adjustment

Adjustment condition	Specification	Adjustment point
• Input the command A from the RS-232C terminal. • Connect a frequency counter to the test point.	TP19/DAD-31 (E-4) 13,500,000±20 Hz	RV6/DAD-31 (F-4)

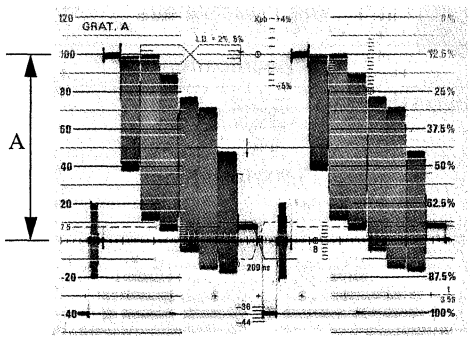
4-2-1-2. S OUT Y Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.) • Menu OFF by remote commander. (Display "MAIN MENU" or "QUICK MENU" and wait about 8 seconds.)	VIDEO OUT MONITOR (Y)  A=100±1 IRE	RV7/DAD-31 (G-4)

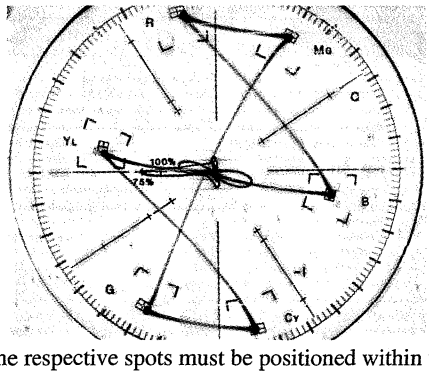
4-2-1-3. S OUT C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT MONITOR (C)  The respective spots must be positioned within the specified "⊞" zones.	◐ RV8/DAD-31 (G-4)

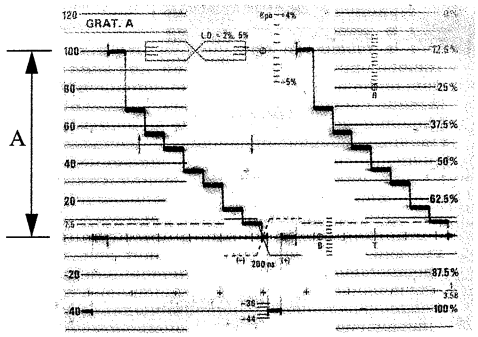
4-2-1-4. Composite OUT Y Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT AUX  A=100±1 IRE	◐ RV9/DAD-31 (G-3)

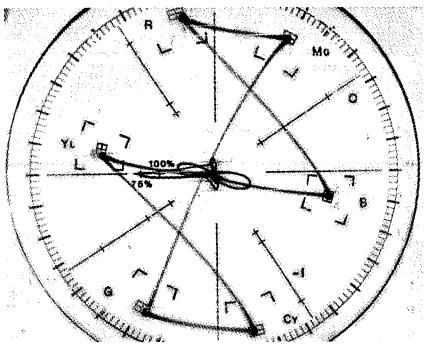
4-2-1-5. Composite OUT C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT AUX  The respective spots must be positioned within the specified "⊞" zones.	◐ RV10/DAD-31 (G-4)

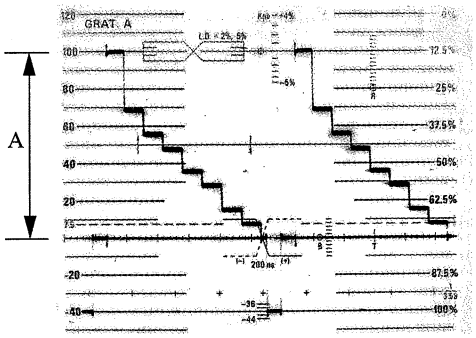
4-2-1-6. S IN Y Level Adjustment

Adjustment condition	Specification	Adjustment point
• Input the command B from the RS-232C terminal.	VIDEO OUT MONITOR (Y)  A=100±1 IRE	RV2/DAD-31 (D-1)

4-2-1-7. S IN C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command B is continued.)	VIDEO OUT MONITOR (C)  The respective spots must be positioned within the specified "⊞" zones ±2IRE, ±2°.	RV4/DAD-31 (D-1) RV5/DAD-31 (E-1) S1/DAD-31 (B-1)

4-2-1-8. Composite IN Y Level Adjustment

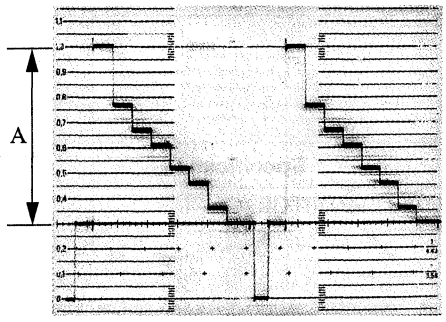
Adjustment condition	Specification	Adjustment point
• Input the command C from the RS-232C terminal.	VIDEO OUT MONITOR (Y)  A=100±1 IRE	RV1/DAD-31 (G-2)

4-2-2. DAD-31P Board Adjustment (PCS-P300P)

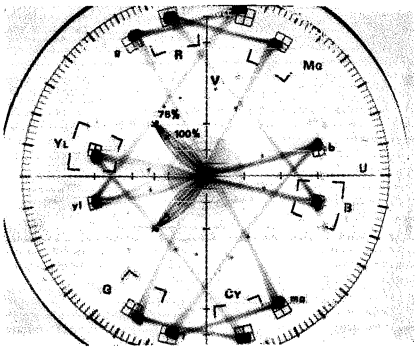
4-2-2-1. PCLK Frequency Adjustment

Adjustment condition	Specification	Adjustment point
• Input the command A from the RS-232C terminal. • Connect a frequency counter to the test point.	TP19/DAD-31P (E-4) 13,500,000±20 Hz	RV6/DAD-31P (F-4)

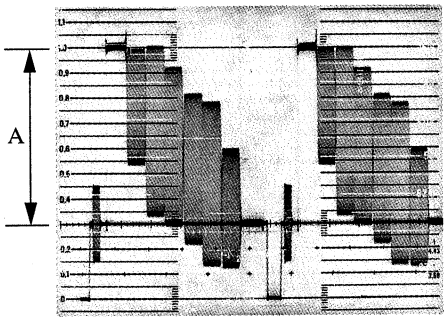
4-2-2-2. S OUT Y Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.) • Menu OFF by remote commander. (Display "MAIN MENU" or "QUICK MENU" and wait about 8 seconds.)	VIDEO OUT MONITOR (Y)  A=700±7 mV	RV7/DAD-31P (G-4)

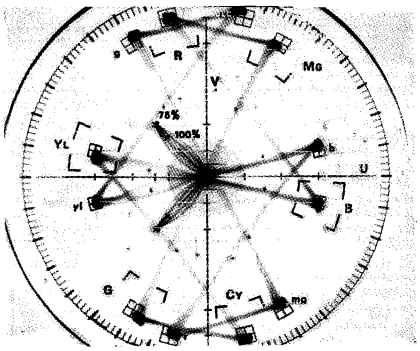
4-2-2-3. S OUT C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT MONITOR (C)  The respective spots must be positioned within the specified "⊞" zones.	RV8/DAD-31P (G-4)

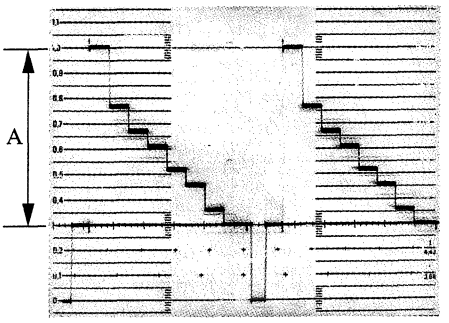
4-2-2-4. Composite OUT Y Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT AUX  A=700±7 mV	RV9/DAD-31P (G-3)

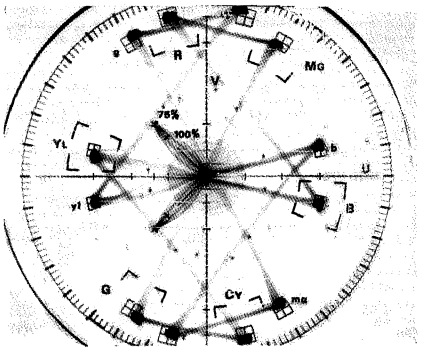
4-2-2-5. Composite OUT C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command A is continued.)	VIDEO OUT AUX  The respective spots must be positioned within the specified "⊞" zones.	RV10/DAD-31P (G-4)

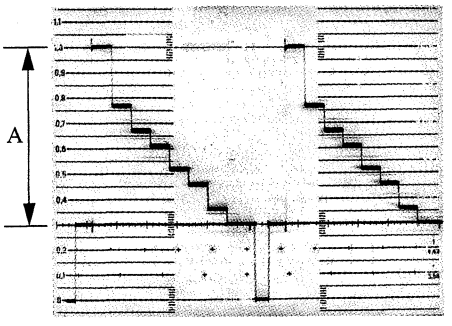
4-2-2-6. S IN Y Level Adjustment

Adjustment condition	Specification	Adjustment point
• Input the command B from the RS-232C terminal.	VIDEO OUT MONITOR (Y)  A=700±7 mV	RV2/DAD-31P (D-1)

4-2-2-7. S IN C Level Adjustment

Adjustment condition	Specification	Adjustment point
(Execution of the command B is continued.)	VIDEO OUT MONITOR (C)  The respective spots must be positioned within the specified "⊞" zones ±2%, ±2°.	RV4/DAD-31P (D-1) RV5/DAD-31P (E-1) S1/DAD-31P (B-1)

4-2-2-8. Composite IN Y Level Adjustment

Adjustment condition	Specification	Adjustment point
• Input the command C from the RS-232C terminal.	VIDEO OUT MONITOR (Y)  A=700±7 mV	RV1/DAD-31P (G-2)

SECTION 5
DIAGNOSTICS GUIDE

5-1. OUTLINE

The PCS-P300/P300P diagnostics software enables processor (PCS-P300/P300P) I/O, memory operation in addition to downloading the system program and to verify operation of the application task.
The processor operates on the loader stored in the flash memory (IC122) on the CPU board and the system software stored in the flash memory (IC123 and IC124). The "TriniCom Simple Debugger" is included in the system software while the "TriniCom Boot/Loader" is included in the loader, providing two kinds of operation.

5-1-1. TriniCom Simple Debugger

The "TriniCom Simple Debugger" starts up as the entire TV conference system is operated and its functions work. The prompt "pcs>" appears on the terminal connected via RS-232C. The operation software of the "TriniCom Simple Debugger" starts up by pressing POWER ON on the commander while the main power of the processor is on.
The "TriniCom Simple Debugger" has the five mode: "monitor mode", "diag mode", "debug mode", "command mode" and "external control mode" to be used depending upon the operating content.

5-1-2. TriniCom Boot/Loader

The prompt "pcs(mini)>" appears on the terminal connected via RS-232C.
The "TriniCom Boot/Loader" starts up by turning on the terminal first before turning on the processor, pressing the "Ctrl + C" keys on the terminal then finally turning on the power of the processor.

5-2. COMMAND

5-2-1. Commands of TriniCom Simple Debugger

5-2-1-1. "monitor mode"

The default mode after turning on the power is the monitor mode.

[menu display]

help	show this help menu.
diag	enter diag mode.
debug	enter debug mode.
pass	enter command pass mode.
cntr	enter external control mode.
speed [speed]	set speed (1200/2400/4800/9600/19200/38400)
reset	system reset

Commands	Contents
help	Displays this menu. help ↵
diag	Switches to the diag mode. pcs>diag ↵ password:pcsdiag ↵ Enter password (pcsdiag). pcs(diag)> The prompt pcs (diag) > appears after switched to the diag mode.
debug	Switches to the debug mode. pcs>debug ↵ password:pcsdebug ↵ Enter password (pcsdiag). pcs(db)> The prompt pcs (db) > appears after switched to the debug mode.
pass	Switches to the pass mode. pass ↵
cntr	Switches to the external control mode. cntr ↵
speed	Set the RS-232C data speed between the terminal and PCS-P300/P300P. The data speed at the terminal must be modified when the above setting is changed. speed 1200/2400/4800/9600/19200/38400 ↵ └ Select a speed to be set.
reset	Performs the system reset of the processor. reset ↵

5-2-1-2. "diag mode"

The prompt is pcs(diag) >.

[menu display]

help	show this help menu
ver	show all task information
show	show dial/setup data
loop [loop_point], [mode]	loop back set (on/off)
save [setup/image]	save dial/setup/program to men_ card
load (setup), (clr)	dial/setup data down load
dir	show men_ card directry
debug	enter debug mode.
pass	enter command pass mode.
cntr	enter external control mode.
exit	exit diag command
speed [speed]	set speed (1200/2400/4800/9600/19200/38400)
reset	system reset

Commands	Contents
ver	Displays versions of each task which is processed by the host CPU in the system software. ver ↵ (This is an example of execution.) task_id priority task_name date time note 00(00h) 63(3fh) sysinit 95-11-22 12:20 system init module for nmx-112 . .
show	Contents of a maximum of 120 dial registrations stored in the processor are all displayed. show ↵ (This is an example of execution.) %001_AD:TOKYO HQ · · · · Contents of index %001_A1:03-5448-0001 ┐ %001_A2:03-5448-0001 │ %001_B1:03-5448-0002 ├ Line number %001_B2:03-5448-0002 │ %001_C1:03-5448-0003 │ %001_C2:03-5448-0003 ┘ %001_IF:BRI · · · · · · · · · Types of line/LINE I/F %001_LR:64K · · · · · · · · · Line rate %001_AU:7K · · · · · · · · · Audio quality % . . In the order of registration
loop	Sets a signal loop back within the processor. loop ↵ The next menu is displayed on the terminal. loop back point loop d1.....IF-664/664A I-interface loop loop d2.....IF-664 TDM loop } only during connection (ON LINE) loop v1.....DAD-31/31P, AD-DA loop loop a1.....DPR-97 audio linear loop loop a2.....DPR-97 audio coded loop loop p1.....T120 loop loop d1, on ↵ (Setting of a loop) loop d1, off ↵ (Canceling a loop)
save	Saves all of the dial numbers, system setup values or system software registered inside the processor, into memory card (PCS-MC10, etc.) save setup ↵ (Saves all of the dial numbers and the system setup values.) save image ↵ (Saves the system software.)
load	Loads the dial numbers and the system setup values stored in the memory card, into the memory inside the processor. load setup ↵ (Loads from the memory card.) load setup, clr ↵ (Be careful of this operation : Erases all of the dial numbers registered in the processor and returns the system setup values to the initial values.)
dir	Displays the directories recorded in the memory card. dir ↵

5-2-1-3. "debug mode"

The prompt is pcs(db) >.

[menu display]

help	show this help menu
mode (mode)	access mode (byte/word/dword)
dump (addr)	dump memory
set [addr], [data] (;)	set memory (no verify)
fill [sta addr], [end addr], [data]	fill memory
out [addr], [data] (;)	output port (no verify)
in [addr]	input port
mail [task_id], [message](!)	send message (bin mode)
flag [flag_id]	set event_flag
log [log_mode]	log save on/off
hist (index)	dump log (index/time)
dbinf [task_name], [mode]	set debug imformation (on/off)
diag	enter diag mode.
pass	enter command pass mode.
cntr	enter external control mode.
exit	exit debug mode
speed [speed]	set speed (1200/2400/4800/9600/19200/38400)
reset	system reset

Commands	Contents
mode	Sets the data length of I/O inside processor and the data length during read and write to and from memory. mode byte ↵ (byte : Sets the byte data length) (word : Sets the word data length) (dword : Sets the double word length)
dump	Reads data from memory inside the processor. The read-out data length follows the [mode] command setting. dump $ addr ↵ (Reads from the set address [$addr].) dump ↵ (Starts reading from the next address after the last read-out address.)
set	Writes data into the memory inside the processor. The write data length follows the [mode] command setting. set $addr, data ↵ (Verifies after writing.) set $addr, data; ↵ (Does not verify after writing.)
fill	Writes data consecutively into memory inside the processor. The write data length follows the [mode] command setting. fill [sta_addr], [end_addr], [data] ↵ (Writes the set data from the set starting address to the ending address without verification.) Read-out starting address Read-out ending address
out	Writes data into the I/O port inside the processor. The write data length follows the [mode] command setting. out [addr], [data] ↵ (Verifies after writing.) out[addr], [data]; ↵ (Does not verify after writing.)
in	Reads out data from the I/O port inside the processor. The read-out data length follows the [mode] command setting. in [addr] ↵
mail	Do not use these commands as they affect the routine operation of the processor.
flag	
log	
hist	
dbinf	

5-2-1-4. "command pass mode"

[menu display]

command pass task select
if_mgr ..... if control & info display.
vcpdb ..... video dsp control & info disp.
camtx ..... camera control.
[task_id] ... task_id direct select.
others ..... not support.

Commands	Contents
if_mgr	Do not use these commands as they affect the routine operation of the processor.
vcpdb	
camtx	
[task_id]	

5-2-2. Commands of TriniCom Boot/Loader

[menu display]

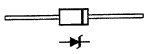
out	[addr], [data](;)	output port (no verify)
in	[addr]	input port
dump	(addr)	dump memory
set	[addr],[data](;)	set memory (no verify)
fill	[sta_addr], [end_addr], [data]	fill memory
mode	(mode)	access mode (byte/word/dword)
load	(image)	program down load (from memory card)
speed	[speed]	set speed (1200/2400/4800/9600/19200/38400)

Refer to the description of the [debug mode] for operating procedure.

SECTION 6
SEMICONDUCTOR PIN ASSIGNMENTS

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

DIODE

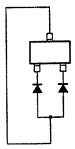


1GWJ42

-TOP VIEW-

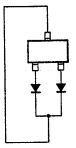
RD9.1SB
RD9.1SB-T1

-TOP VIEW-



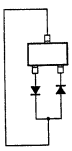
1S2835-T1
1S2836

-TOP VIEW-



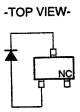
1S2837-T1
1SS184

-TOP VIEW-



1SS226
1SS226-TE85L

-TOP VIEW-



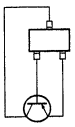
1SS294
1SS294-TE85L

-TOP VIEW-

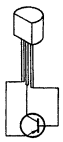
RD15SB
RD15SB-T1

TRANSISTOR

-TOP VIEW-

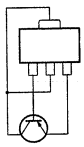


2SA1162G
2SA1611-M5M6
2SA1611T1-M5M6
2SA812-T1-M5M6
2SB624-BV345
2SB624T1-BV345



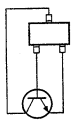
2SB1116A-L
2SB1116A-TP-LK

-TOP VIEW-

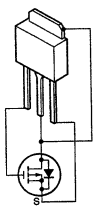


2SB798-DL
2SB798-T1-DLDK

-TOP VIEW-

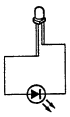


2SC1623
2SC1623-T1-L5L6
2SC4177-L6
2SC4177-T1L5L6

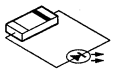


2SJ132-Z
2SJ132-Z-T2

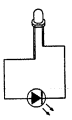
OTHERS



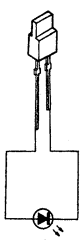
AA3422S ;ORANGE
TLO123



CL-150PG-CD ;GREEN
CL-150PG-CD-T
CL-150R-CD RED
CL-150R-CD-T



SLP281C-51 ;GREEN
TLG123A

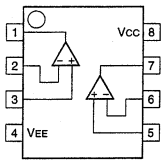


TLY205 (TOSHIBA)

IC

BA10358F-E2 (ROHM)FLAT PACKAGE
UPC358G2-E2

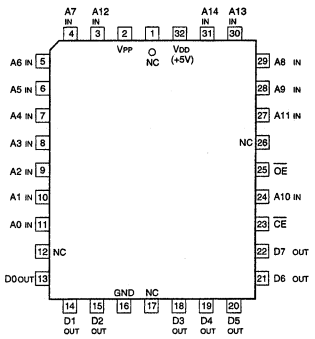
DUAL OPERATIONAL AMPLIFIERS
(SINGLE-SUPPLY TYPE)
–TOP VIEW–

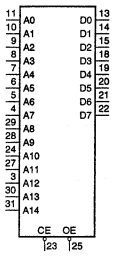


TYPE	Vcc - VEE
828 TYPE	+5 to +36V
2244 TYPE	+2.5 to +36V
2904 TYPE	+3 to +24V
3404 TYPE	+4 to +32V
3414 TYPE	+3 to +10V
4572 TYPE	+4 to +14V
5216 TYPE	+4 to +32V
7022 TYPE	+3 to +16V
75W01 TYPE	+3 to +10V
33172 TYPE	+3 to +44V
OTHERS	+3 to +36V

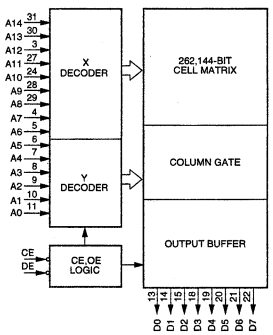
CY27C256-120JC (SIGNETICS)(PLCC PACKAGE)

C-MOS 256k (32k x 8)-BIT EPROM
- TOP VIEW -





A0 - A14 ; ADDRESS INPUT
$\overline{CE}$; CHIP ENABLE INPUT
D0 - D7 ; DATA OUTPUT
$\overline{OE}$; OUTPUT ENABLE INPUT
VPP ; PROGRAM POWER SUPPLY

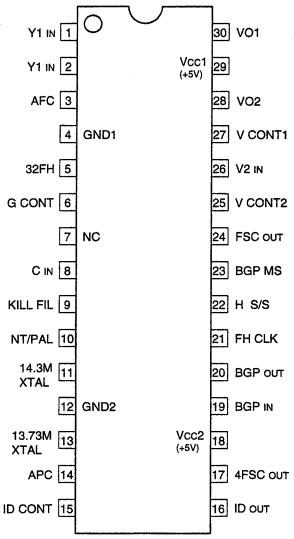


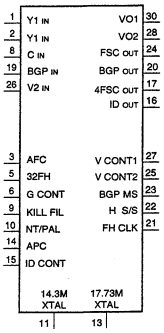
An	$\overline{CE}$	$\overline{OE}$	VPP	Dn	FUNCTION
An	0	0	+5V	D out	READ
An	0	1	+5V	HI-Z	OUTPUT DISABLE
X	1	X	+5V	HI-Z	STANDBY

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z; HIGH IMPEDANCE

CXA1686M (SONY)FLAT PACKAGE
CXA1686M-T6

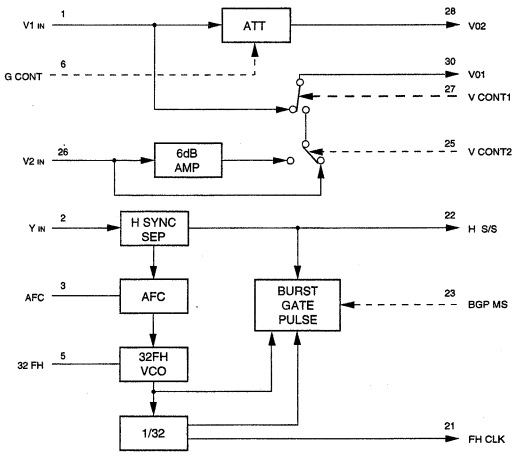
4FSC CLOCK GENERATOR
-TOP VIEW-

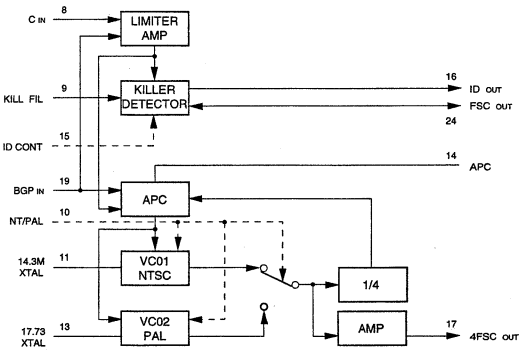




INPUT
V1 IN ; VIDEO INPUT
Y IN ; Y INPUT
C IN ; CHROMA INPUT
BGP IN ; BURST GATE PULSE INPUT
V2 IN ; VIDEO 2 INPUT

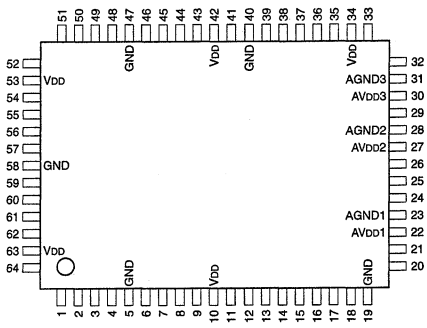
OUTPUT
ID OUT ; KILLER ID DISTINCTION OUTPUT
BGP OUT ; BURST GATE PULSE OUTPUT
FH CLK ; FH CLOCK OUTPUT
H S/S ; H SYNC SEP OUTPUT
FSC OUT ; NTSC/PAL FSC CLOCK OUTPUT
VO2 ; VIDEO 2 OUTPUT
VO1 ; VIDEO 1 OUTPUT





CXD1913Q (SONY)

DIGITAL VIDEO ENCODER
-TOP VIEW-



(AVDD1 to 3 = +5V)
(VDD = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	PD7	17	I/O	PD9/TD1	33	I/O	TD10	49	I	SCK/SCL
2	I	PD6	18	I/O	PD8/TD0	34	—	VDD	50	I	XCS/SA
3	I	PD5	19	—	GND	35	I/O	TD9	51	I	XVRST
4	I	PD4	20	I	IREF	36	I/O	TD8	52	I	FI
5	—	GND	21	I	VREF	37	I	XTEST1	53	—	VDD
6	I	PD3	22	—	AVDD1	38	I	XTEST2	54	I	XTEST4
7	I	PD2	23	—	AGND1	39	I	XTEST3	55	I	XRST
8	I	PD1	24	O	COMP-O/V	40	—	GND	56	I	SYSCLK
9	I	PD0	25	O	VB	41	I	TRST	57	O	PDCLK
10	—	VDD	26	O	VG	42	—	VDD	58	—	GND
11	I/O	PD15/TD7	27	—	AVDD2	43	I	TDI	59	O	VSYNC
12	I/O	PD14/TD6	28	—	AGND2	44	I	TMS	60	O	HSYNC
13	I/O	PD13/TD5	29	O	Y-OUT/Y	45	I	TCK	61	O	SO
14	I/O	PD12/TD4	30	—	AVDD3	46	O	TDO	62	O	FID
15	I/O	PD11/TD3	31	—	AGND3	47	—	GND	63	—	VDD
16	I/O	PD10/TD2	32	O	C-OUT/U	48	I	SI/SDA	64	I	XIICEN

INPUT

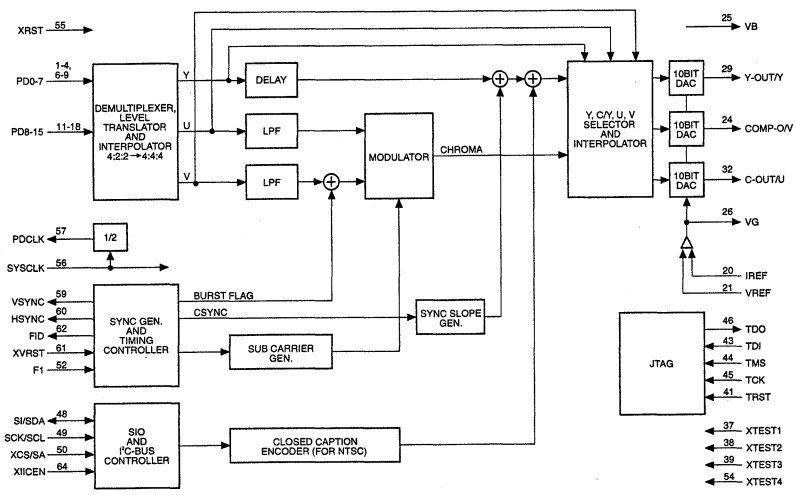
FI	; FIELD ID INPUT
IREF	; REFERENCE CURRENT INPUT
PD0-15	; PIXEL DATA INPUTS
SI/SDA	; SERIAL DATA INPUT
SCK/SCL	; SERIAL CLOCK INPUT
SYSCLK	; SYSTEM CLOCK INPUT
TCK	; CLOCK INPUT FOR JTAG
TDI	; SERIAL DATA INPUT FOR JTAG
TMS	; CONTROL SIGNAL INPUT FOR JTAG
TRST	; RESET SIGNAL INPUT FOR JTAG
VREF	; REFERENCE VOLTAGE INPUT
XCS/SA	; CHIP SELECT INPUT
XIICEN	; SERIAL INTERFACE MODE SELECT INPUT
XRST	; SYSTEM RESET INPUT
XTEST1-4	; TEST MODE CONTROL INPUTS
XVRST	; V-SYNC RESET INPUT

OUTPUT

COMP-O/V	; COMPOSITE/V D/A CONVERTER OUTPUT
C-OUT/U	; CHROMA/U D/A CONVERTER OUTPUT
FID	; FIELD ID OUTPUT
HSYNC	; H SYNC OUTPUT
PDCLK	; PIXEL DATA CLOCK OUTPUT FOR 13.5MHz
SO	; SERIAL OUTPUT
TDO	; SERIAL DATA OUTPUT FOR JTAG
VB, VG	; EXTERNAL CAPACITOR TERMINAL
VSYNC	; V SYNC OUTPUT
Y-OUT/Y	; Y D/A CONVERTER OUTPUT

INPUT/OUTPUT

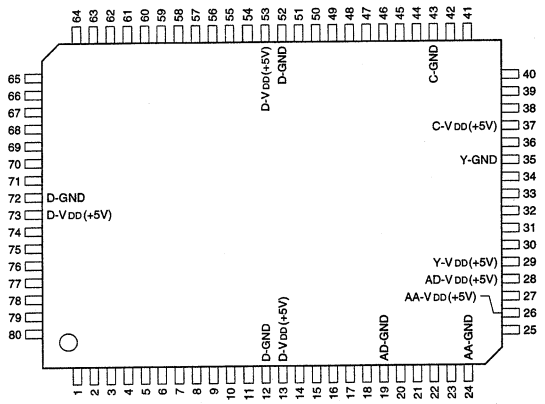
TD0-10	; TEST DATA BUS



CXD2024AQ (SONY)
CXD2024AQ-TL

C-MOS DIGITAL COMB FILTER (NTSC/PAL)

- TOP VIEW -



(VDD=+5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	VI8	21	I	CRV	41	I	CVRF	61	O	C6
2	I	VI7	22	O	RB	42	O	CIRF	62	O	C5
3	I	VI6	23	–	GR	43	–	C-GND	63	O	C4
4	I	VI5	24	–	AA-GND	44	O	YA	64	O	C3
5	I	VI4	25	I	ADIN	45	O	Y9	65	O	C2
6	I	VI3	26	–	AA-VDD	46	O	Y8	66	O	C1
7	I	VI2	27	O	RT	47	O	Y7	67	I	XCOE
8	I	VI1	28	–	AD-VDD	48	O	Y6	68	I	APCN
9	I	ADC0	29	–	Y-VDD	49	O	Y5	69	I	RATI
10	I	INSL	30	I	XAYO	50	O	Y4	70	I	NTPL
11	I	OCLK	31	O	AYO	51	O	Y3	71	I	TST
12	–	D-GND	32	O	YVG	52	–	D-GND	72	–	D-GND
13	–	D-VDD	33	I	YVRF	53	–	D-VDD	73	–	D-VDD
14	O	CLKO	34	O	YIRF	54	O	Y2	74	I	PNR
15	I	MCK	35	–	Y-GND	55	O	Y1	75	I	TEST
16	I	ADCK	36	O	VB	56	I	XYOE	76	I	TEST
17	I	CLPI	37	–	C-VDD	57	O	CA	77	I	TEST
18	I	XCPON	38	I	XACO	58	O	C9	78	I	TEST
19	–	AD-GND	39	O	ACO	59	O	C8	79	I	BPF
20	I	ICP	40	O	CVG	60	O	C7	80	I	TEST

INPUT

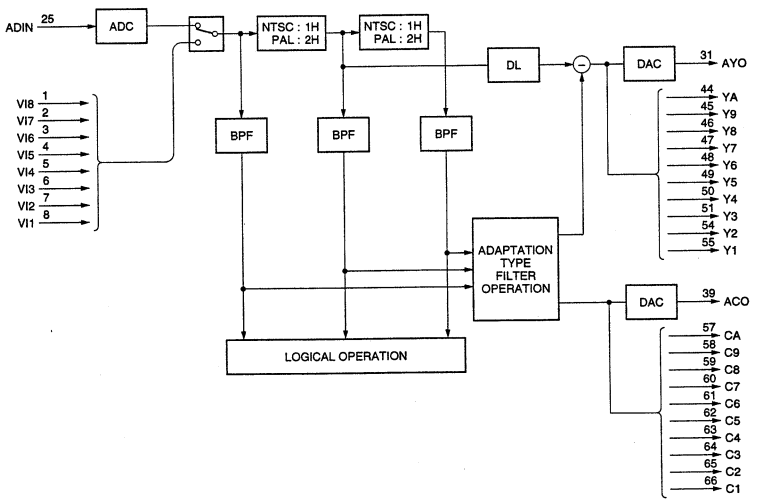
ADCK ; CLOCK FOR A/D CONVERTER
ADCO ; A/D CONVERTER OUTPUT SELECT
(H : DIGITAL OUTPUT MODE, L : STANDARD MODE)
ADIN ; COMB FILTER ANALOG DATA
APCN ; APERTURE COMPENSATION
(H : FREQUENCY RESPONSE DEGRADATION COMPENSATE BY APERTIRE EFFECT,
L : STANDARD)
BPF ; Y/C SEPARATE PROCESS MODE SETTING
(H : BPF SEPARATE MODE, L : ADAPTABILITY PROCESS MODE)
CLPI ; CLAMP PULSE FOR A/D CONVERTER
CRV ; CLAMP REFERENCE VOLTAGE
CVRF ; FULL SCALE VALUE SETTING OF ANALOG CHROMA SIGNAL
ICP ; VOLTAGE INTERGRATION FOR CLAMP CONTROL
INSL ; INPUT DATA SELECT OF COMB FILTER (H : DIGITAL INPUT, L : ANALOG INPUT)
MCK ; MASTER CLOCK
NTPL ; NTSC/PAL MODE SETTING (H : PAL, L : NTSC)
OCLK ; CLOCK AMPLIFIER
PNR ; DOT INTERFERENCE (PAL H : MINIMUM, L : BEFORE IMPROVEMENT
NTSC : L FIXED)
RATI ; RATIO SETTING (H : PAL (WHEN THE PNR IS ON, SET TO L FORCED), L : NTSC)
TEST ; TEST (NORMAL : L FIXED)
TST ; Y OUTPUT THROUGH MODE
(H : COMPOSITE VIDEO SIGNAL (TO AYO, YA-Y1) AND Y/C SEPARATED
CHROMA SIGNAL (TO ACO, CA-C1), L : Y-C SEPARATION MODE)
VI1-VI8 ; DIGITAL DATA
XACO ; ANALOG CHROMA SIGNAL REVERSE CURRENT (CONNECTED TO C-GND)
XAYO ; ANALOG Y SIGNAL REVERSE CURRENT (CONNECTED TO Y-GND)
XCOE ; DIGITAL CHROMA SIGNAL OUTPUT CONTROL
(H : HIGH IMPEDANCE, L : STANDARD OUTPUT)
XCPON ; CLAMP SETTING FOR A/D CONVERTER
(H : A/D CONVERTER CAPABILITY, L : CLAMP CAPABILITY)
XYOE ; DIGITAL Y SIGNAL OUTPUT CONTROL
(H : HIGH IMPEDANCE, L : STANDARD OUTPUT)
YVRF ; FULL SCALE VALUE SETTING OF ANALOG Y SIGNAL

OUTPUT

ACO ; ANALOG CHROMA SIGNAL
AYO ; ANALOG Y SIGNAL
C1-C9 ; DIGITAL CHROMA SIGNAL
CA ; DIGITAL CHROMA SIGNAL
CIRF ; EXTERNAL RESISTOR CONNECTION
CLKO ; CLOCK AMPLIFIER
CVG ; EXTERNAL CAPACITOR CONNECTION
RB ; STANDARD VALUE (+0.5V) OF REFERENCE VOLTAGE (BOTTOM)
RT ; STANDARD VALUE (+2.6V) OF REFERENCE VOLTAGE (TOP)
VB ; EXTERNAL CAPACITOR
Y1-Y9 ; DIGITAL Y SIGNAL
YA ; DIGITAL Y SIGNAL
YIRF ; EXTERNAL RESISTOR CONNECTION
YVG ; EXTERNAL CAPACITOR CONNECTION

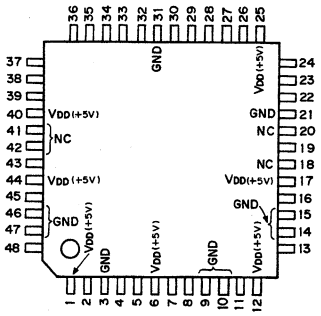
VDD (SUPPLY VOLTAGE=+5V)
AA-VDD ; ANALOG SUPPLY VOLTAGE FOR A/D CONVERTER
AD-VDD ; DIGITAL SUPPLY VOLTAGE FOR A/D CONVERTER
C-VDD ; ANALOG SUPPLY VOLTAGE FOR D/A CONVERTER (CHROMA)
D-VDD ; DIGITAL SUPPLY VOLTAGE
Y-VDD ; ANALOG SUPPLY VOLTAGE FOR D/A CONVERTER (Y)

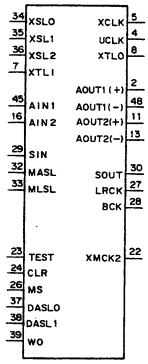
GND
AA-GND ; ANALOG GND FOR A/D CONVERTER
AD-GND ; DIGITAL GND FOR A/D CONVERTER
C-GND ; ANALOG GND FOR D/A CONVERTER (CHROMA)
D-GND ; DIGITAL GND
GR ; GARD RING (CONNECTED TO AA-GND)
Y-GND ; ANALOG GND FOR D/A CONVERTER (Y)



CXD2570Q (SONY)

C-MOS AUDIO 1-BIT A/D CONVERTER
– TOP VIEW –



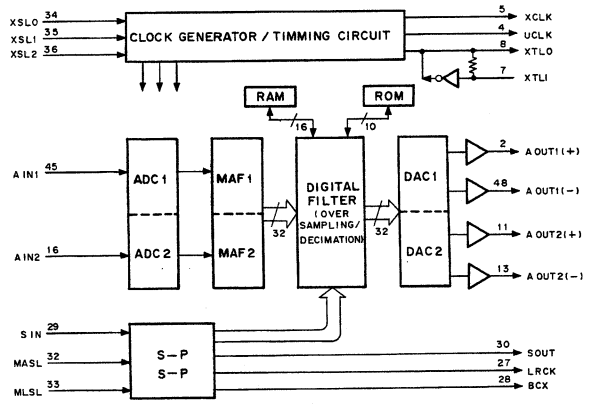


(VDD = + 5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	–	VDD	25	–	VDD
2	O	AOUT1 (+)	26	I	MS
3	–	GND	27	O	LRCK
4	O	UCLK	28	O	BCK
5	O	XCLK	29	I	SIN
6	–	VDD	30	O	SOUT
7	I	XTL1	31	–	GND
8	O	XTL0	32	I	MASL
9	–	GND	33	I	MLSL
10	–	GND	34	I	XSL0
11	O	AOUT2 (+)	35	I	XSL1
12	–	VDD	36	I	XSL2
13	O	AOUT2 (–)	37	I	DASL0
14	–	GND	38	I	DASL1
15	–	GND	39	I	WO
16	I	AIN2	40	–	VDD
17	–	VDD	41	–	NC
18	–	NC	42	–	NC
19	–	SUB	43	–	SUB
20	–	NC	44	–	VDD
21	–	GND	45	I	AIN1
22	O	XMCK2	46	–	GND
23	I	TEST	47	–	GND
24	I	CLR	48	O	AOUT1 (–)

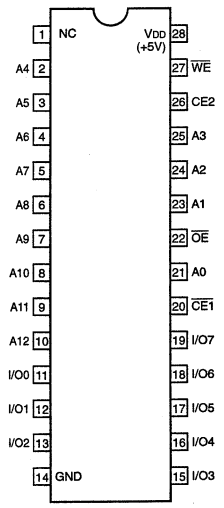
INPUT
AIN1 ; CH-1 A/D CONVERTER ANALOG
AIN2 ; CH-2 A/D CONVERTER ANALOG
CLR ; SYSTEM CLEAR. NORMALLY SET AT "H". CLEAR AT "L".
DASL0 ; IC MEASURING. NORMALLY SET AT "H".
DASL1 ; IC MEASURING. NORMALLY SET AT "L".
MASL ; INPUTS 16-BIT SERIAL DATA TO FIRST HALF 16-BIT SLOT OR LATTER HALF 32-BIT SLOT IN 32-BIT SLOT.
MLSL ; SELECTS 16-BIT SERIAL DATA INPUT/OUTPUT IN LSB OR MSB FIRST. "H" = MSB FIRST "L" = LSB FIRST.
MS ; SWITCHES MASTER/SLAVE MODE. "H" = MASTER MODE, "L" = SLAVE MODE.
SIN ; 1 SAMPLING 2 CHANNELS SERIAL DATA
TEST ; TEST PIN. NORMALLY SET AT "L".
WO ; SYNC WINDOW OPEN. "H" = WINDOW MASKED "L" = WINDOW OPEN.
XSL0 – XSL2 ; CRYSTAL OSCILLATION.
XTLI ; CRYSTAL OSCILLATION. ALSO RECEIVES EXTERNAL MASTER CLOCK.

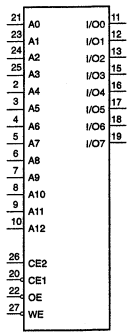
OUTPUT
AOUT1 (–) ; CH-1 D/A CONVERTER ANALOG NEGATIVE-PHASE
AOUT1 (+) ; CH-1 D/A CONVERTER ANALOG POSITIVE-PHASE
AOUT2 (+) ; CH-2 D/A CONVERTER ANALOG POSITIVE-PHASE
AOUT2 (–) ; CH-2 D/A CONVERTER ANALOG NEGATIVE-PHASE
BCK ; SERIAL BIT TRANSFER CLOCK FOR SERIAL INPUT DATA SIN AND SERIAL OUTPUT DATA SOUT.
LRCK ; SERIAL I/O SAMPLING FREQUENCY CLOCK. MASTER WHEN OUTPUT, SLAVE WHEN INPUT.
SOUT ; 1 SAMPLING 2 CHANNELS SERIAL DATA
UCLK ; 1/2 DIVIDED CLOCK FREQUENCY FROM XTLI
XCLK ; 256Fs CLOCK
XMCK2 ; IC MEASURING. NORMALLY OUTPUT AT "L".
XTLO ; CRYSTAL OSCILLATION



CY6264-70SC-T2 (CYPRESS)

C-MOS 64k (8k x 8) BIT STATIC RAM
–TOP VIEW–

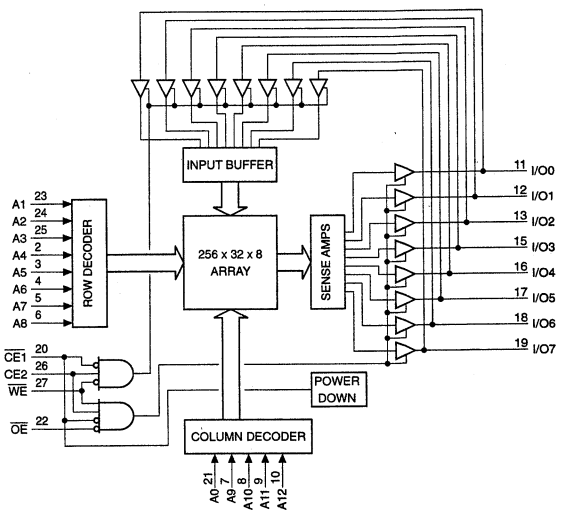




A0–A12 ; ADDRESS INPUTS
$\overline{CE1}$, CE2 ; CHIP ENABLE INPUTS
I/O0–I/O7 ; DATA INPUTS/OUTPUTS
$\overline{OE}$; OUTPUT ENABLE INPUT
$\overline{WE}$; WRITE ENABLE INPUT

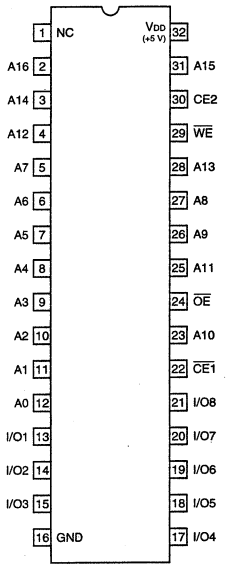
(VDD = +5V)

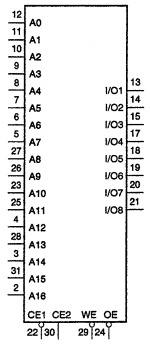
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	—	NC	8	I	A10	15	I/O	I/O3	22	I	$\overline{OE}$
2	I	A4	9	I	A11	16	I/O	I/O4	23	I	A1
3	I	A5	10	I	A12	17	I/O	I/O5	24	I	A2
4	I	A6	11	I/O	I/O0	18	I/O	I/O6	25	I	A3
5	I	A7	12	I/O	I/O1	19	I/O	I/O7	26	I	CE2
6	I	A8	13	I/O	I/O2	20	I	$\overline{CE1}$	27	I	$\overline{WE}$
7	I	A9	14	—	GND	21	I	A0	28	—	VDD



CXK581000AM-10LL (SONY)FLAT PACKAGE
CXK581000AM-10LL-TL

C-MOS 1M (131,072×8)-BIT STATIC RAM
- TOP VIEW -

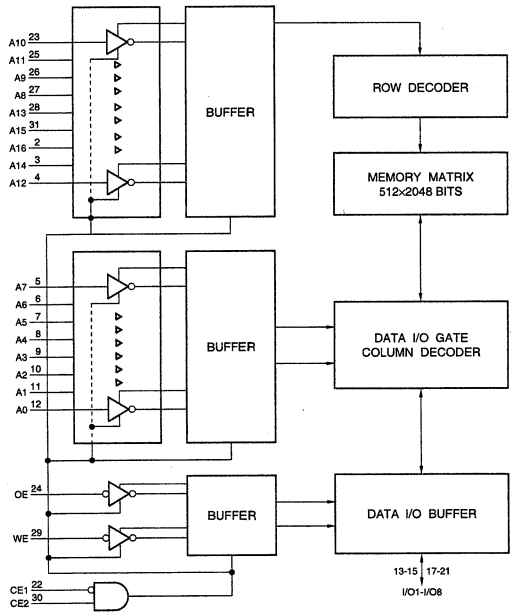




A0 - A16 ; ADDRESS INPUT
I/O1 - I/O8 ; DATA OUTPUTS
$\overline{CE1}$, CE2 ; CHIP ENABLE INPUTS
$\overline{WE}$; WRITE ENABLE INPUT
$\overline{OE}$; OUTPUT ENABLE INPUT

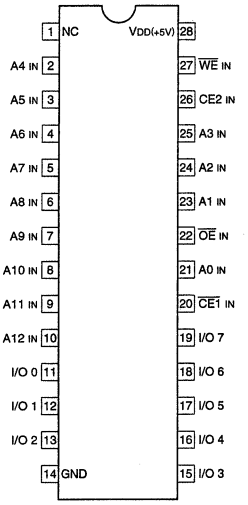
CE1	CE2	OE	WE	MODE	I/O TERMINAL
1	X	X	X	NOT SELECT	HI-Z
X	0	X	X	NOT SELECT	HI-Z
0	1	1	1	OUTPUT DISABLE	HI-Z
0	1	0	1	READ	DATA OUTPUT
0	1	X	0	WRITE	DATA INPUT

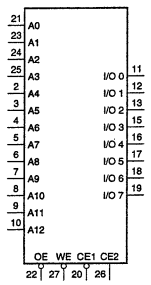
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE



CY7C185-25VC (CYPRESS)J-LEADED PACKAGE
CY7C185-25VCTEL

C-MOS 8192-WORD X 8-BIT HIGH SPEED STATIC RAM
-TOP VIEW-

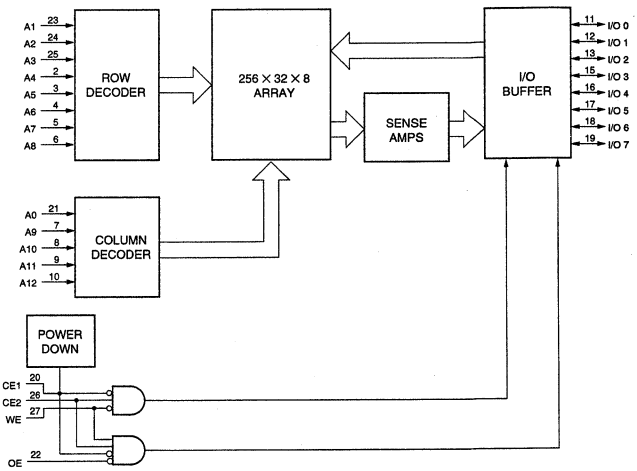




A0 - A12 ; ADDRESS INPUTS
$\overline{CE1}$, CE2 ; CHIP ENABLE INPUT
I/O 0 - I/O 7 ; DATA INPUTS / OUTPUTS
$\overline{OE}$; OUTPUT ENABLE INPUT
$\overline{WE}$; WRITE ENABLE INPUT

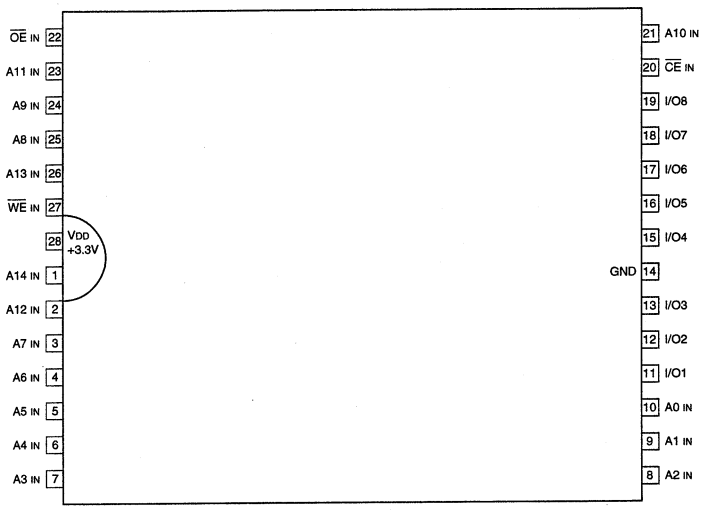
CE1	CE2	OE	WE	MODE	I/O TERMINAL
1	X	X	X	NOT SELECT	HI-Z
X	0	X	X	NOT SELECT	HI-Z
0	1	1	1	OUTPUT DISABLE	HI-Z
0	1	0	1	READ	OUTPUT DATA
0	1	X	0	WRITE	INPUT DATA

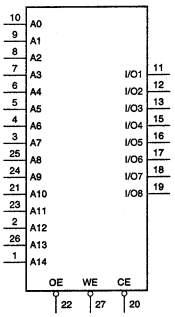
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE



CXK5V8257BTM-10LL (SONY)

C-MOS 32768-WORDx8-BIT HIGH SPEED STATIC RAM
-TOP VIEW-

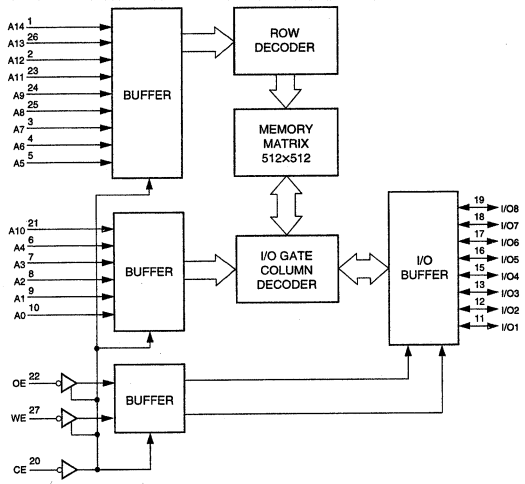




A0-A14 ; ADDRESS INPUTS
CE ; CHIP ENABLE INPUT
I/O1-I/O8 ; DATA INPUTS/OUTPUTS
OE ; OUTPUT ENABLE INPUT
WE ; WRITE ENABLE INPUT

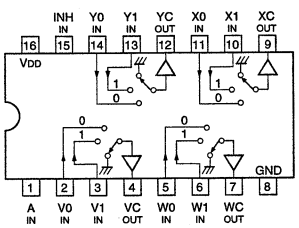
CE	OE	WE	MODE	I/O TERMINAL
1	X	X	NOT SELECT	HIGH IMPEDANCE
0	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	0	1	READ	OUTPUT DATA
0	X	0	WRITE	INPUT DATA

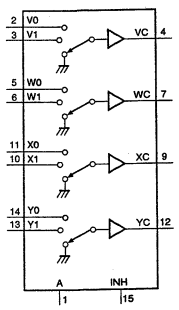
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



IDT74FCT157ATQ-TL (INTEGRATED DEVICE TECHNOLOGY)
SN74HC157ANS (TI)FLAT PACKAGE
SN74HC157ANS-E05
TC74VHC157F (TOSHIBA)FLAT PACKAGE
TC74VHC157F(EL)

C-MOS QUAD 2-LINE-TO-1-LINE DATA SELECTOR/ DEMULTIPLEXER
—TOP VIEW—





NOTE:

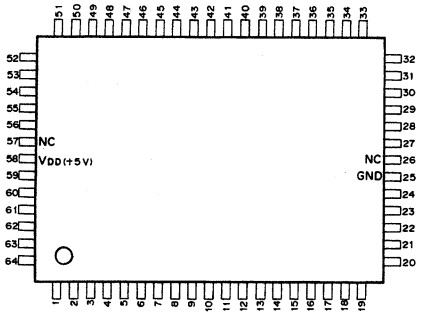
TYPE	VDD
74ACT/74FCT	+5V
TC74AC157P TC74AC157	+2 to +5.5V
TC40H	+2 to +8V
OTHER TYPES	+2 to +6V

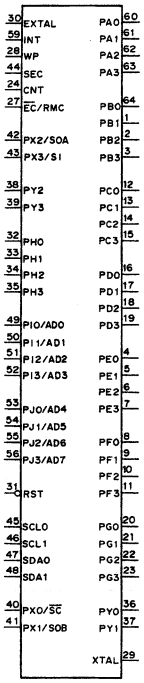
CONT.IN		ON CHANNEL
INH	A	
0	0	0
0	1	1
1	X	GND

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

CXP5068H-242Q (SONY)

C-MOS 4-BIT SINGLE CHIP MICROCOMPUTER
– TOP VIEW –





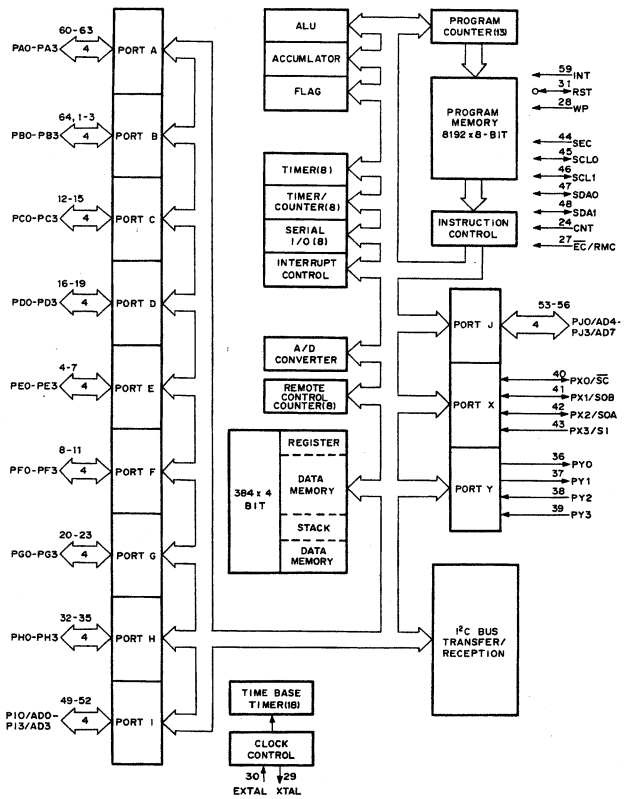
INPUT
CNT ; COUNTER
EC/RMC ; EVENT COUNTER
EXTAL ; CLOCK
INT ; EXTERNAL INTERRUPTION
RY2, RY3 ; PORT Y
SEC ; SYNC CLOCK
SI/PX3 ; SERIAL INPUT PORT X
WP ; WAKE-UP

OUTPUT
PY0, PY1 ; PORT Y
XTAL ; CLOCK

INPUT/OUTPUT
PA0 – PA3 ; PORT A (4 BITS)
PB0 – PB3 ; PORT B (4 BITS)
PC0 – PC3 ; PORT C (4 BITS)
PD0 – PD3 ; PORT D (4 BITS)
PE0 – PE3 ; PORT E (4 BITS)
PF0 – PF3 ; PORT F (4 BITS)
PG0 – PG3 ; PORT G (4 BITS)
PH0 – PH3 ; PORT H (4 BITS)
PI0/AD0 – PI3/AD3 ; PORT I (4 BIT) or ANALOG VOLTAGE INPUT
PJ0/AD4 – PJ3/AD7 ; PORT J (4 BIT) or ANALOG VOLTAGE INPUT
RST ; RESET
SC/PX0 ; SERIAL CLOCK PORT X
SCL0, SCL1 ; I² C BUS I/F TRANSFER CLOCK
SDA0, SDA1 ; I² C BUS I/F TRANSFER DATA
SOA/PX2, SOB/PX1 ; SERIAL OUTPUT PORT X

(VDD = + 5V)

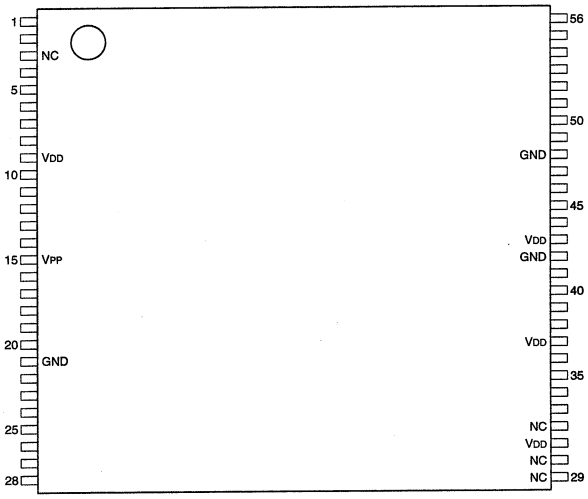
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I/O	PB1	17	I/O	PD1	33	I/O	PH1	49	I/O	PI0/AD0
2	I/O	PB2	18	I/O	PD2	34	I/O	PH2	50	I/O	PI1/AD1
3	I/O	PB3	19	I/O	PD3	35	I/O	PH3	51	I/O	PI2/AD2
4	I/O	PE0	20	I/O	PG0	36	O	PY0	52	I/O	AD3/PI3
5	I/O	PE1	21	I/O	PG1	37	O	PY1	53	I/O	AD4/PJ0
6	I/O	PE2	22	I/O	PG2	38	I	PY2	54	I/O	AD5/PJ1
7	I/O	PE3	23	I/O	PG3	39	I	PY3	55	I/O	AD6/PJ2
8	I/O	PF0	24	I	CNT	40	I/O	PX0/SC	56	I/O	AD7/PJ3
9	I/O	PF1	25	–	GND	41	I/O	PX1/SOB	57	–	NC
10	I/O	PF2	26	–	NC	42	I/O	PX2/SOA	58	–	VDD
11	I/O	PF3	27	I	EC/RMC	43	I	PX3/SI	59	I	INT
12	I/O	PC0	28	I	WP	44	I	SEC	60	I/O	PA0
13	I/O	PC1	29	O	XTAL	45	I/O	SCL0	61	I/O	PA1
14	I/O	PC2	30	I	EXTAL	46	I/O	SCL1	62	I/O	PA2
15	I/O	PC3	31	I/O	RST	47	I/O	SDA0	63	I/O	PA3
16	I/O	PD0	32	I/O	PH0	48	I/O	SDA1	64	I/O	PB0



E28F016SA-100 (INTEL)

C-MOS 16-MBIT FLASH FILE MEMORY

-TOP VIEW-



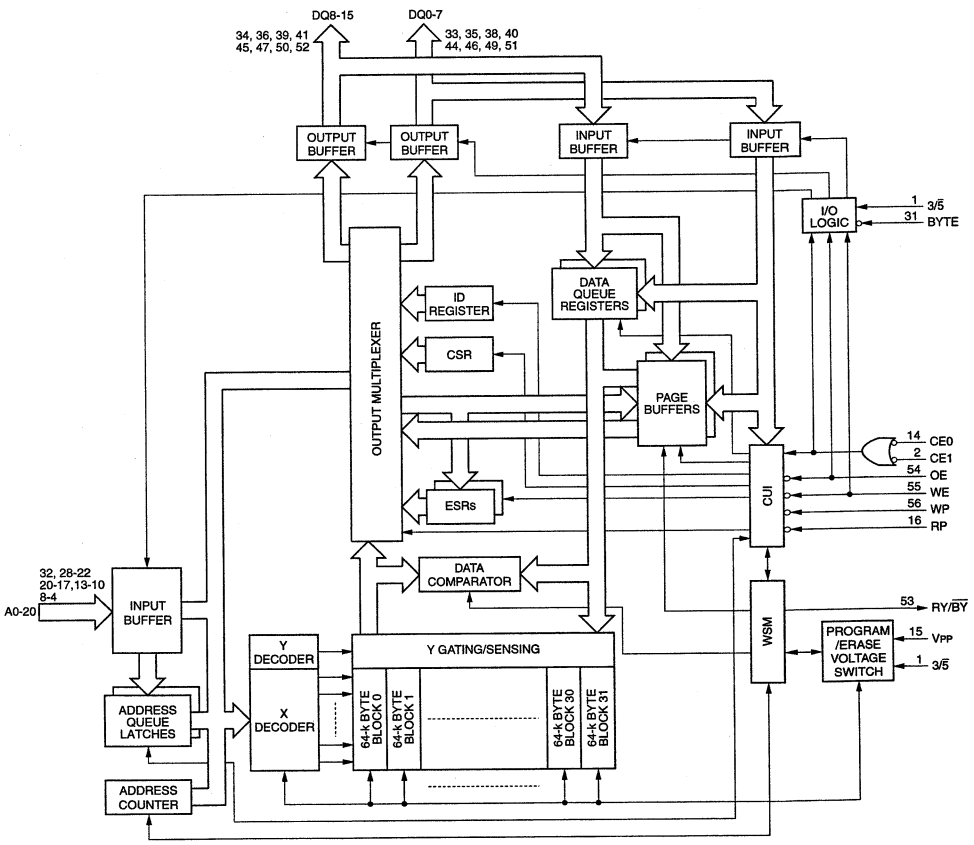
(VPP = +12V)
(VDD = +3.3 or +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	—	3/5	15	—	VPP	29	—	NC	43	—	VDD
2	I	CE1	16	I	RP	30	—	NC	44	I/O	DQ4
3	—	NC	17	I	A11	31	I	BYTE	45	I/O	DQ12
4	I	A20	18	I	A10	32	I	A0	46	I/O	DQ5
5	I	A19	19	I	A9	33	I/O	DQ0	47	I/O	DQ13
6	I	A18	20	I	A8	34	I/O	DQ8	48	—	GND
7	I	A17	21	—	GND	35	I/O	DQ1	49	I/O	DQ6
8	I	A16	22	I	A7	36	I/O	DQ9	50	I/O	DQ14
9	—	VDD	23	I	A6	37	—	VDD	51	I/O	DQ7
10	I	A15	24	I	A5	38	I/O	DQ2	52	I/O	DQ15
11	I	A14	25	I	A4	39	I/O	DQ10	53	O	RY/BY
12	I	A13	26	I	A3	40	I/O	DQ3	54	I	OE
13	I	A12	27	I	A2	41	I/O	DQ11	55	I	WE
14	I	CE0	28	I	A1	42	—	GND	56	I	WP

INPUT
3/5 ; 3.3/5 VOLT SELECT
A0 ; BYTE SELECT ADDRESS
A1-A15 ; WORD SELECT ADDRESSES
A16-A20 ; BLOCK SELECT ADDRESSES
BYTE ; BYTE ENABLE
CE0, CE1 ; CHIP ENABLES
OE ; OUTPUT ENABLE
RP ; RESET/POWER-DOWN
WE ; WRITE ENABLE
WP ; WRITE PROTECT

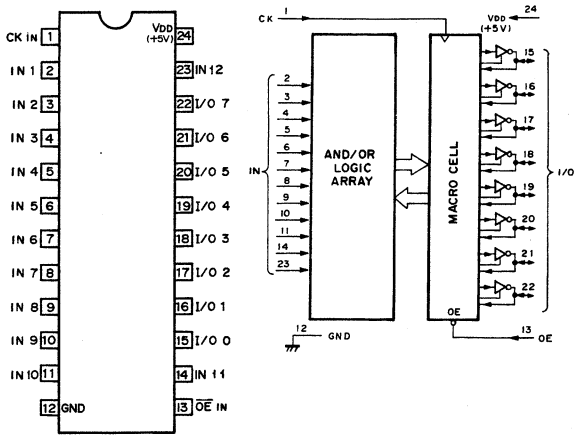
INPUT/OUTPUT
DQ0-DQ15 ; DATA BUS

OPEN DRAIN OUTPUT
RY/BY ; READY/BUSY



GAL20V8B-25QJ (LATTICE)

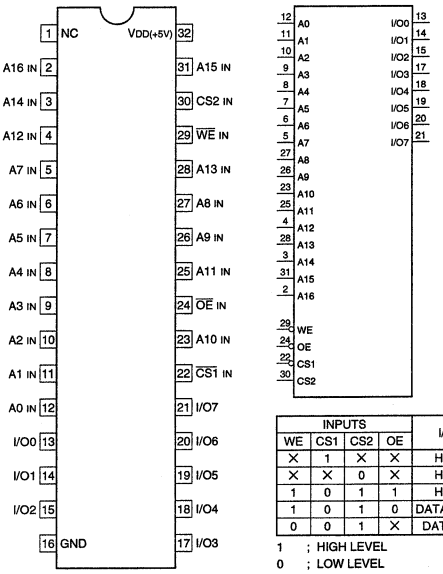
C-MOS ELECTRICALLY ERASABLE PROGRAMMABLE LOGIC DEVICE
– TOP VIEW –



* ABOVE DIAGRAM SHOWS CONDITIONS BEFORE PROGRAMMING.

IDT71024S15Y-TL (INTEGRATED DEVICE TECHNOLOGY)

C-MOS 1M(128 × 8)BIT STATIC RAM
–TOP VIEW–

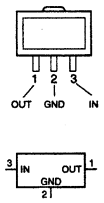


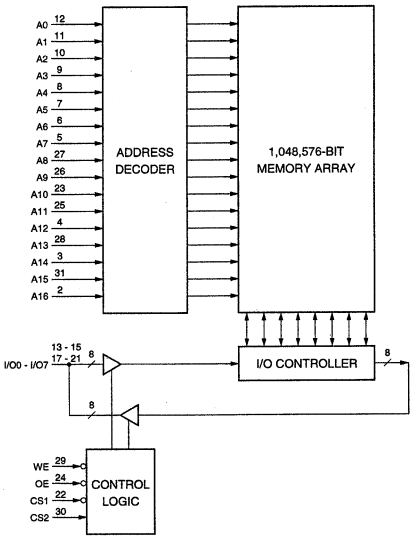
INPUTS				I/O	FUNCTION
WE	CS1	CS2	OE		
×	1	×	×	HI-Z	STANDBY
×	×	0	×	HI-Z	STANDBY
1	0	1	1	HI-Z	OUTPUTS DISABLED
1	0	1	0	DATA OUT	READ DATA
0	0	1	×	DATA IN	WRITE DATA

1 ; HIGH LEVEL
0 ; LOW LEVEL
× ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

HA178L05UA (HITACHI)–5.0V
HA178L05UA-TL (HITACHI)–5.0V
HA178L09UA-TL (HITACHI)–5.0V

THREE TERMINAL NEGATIVE VOLTAGE REGULATOR
– TOP VIEW –

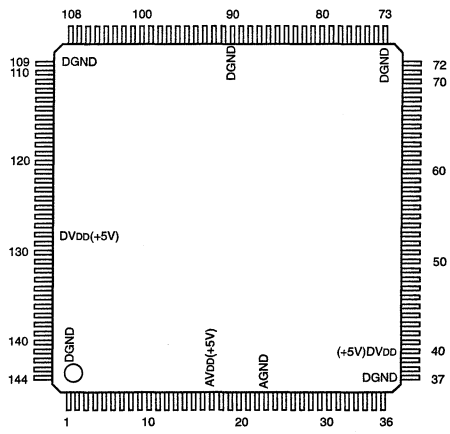




HD81504RFE (HITACHI)

C-MOS ISDNI INTERFACE

-TOP VIEW-



PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	-	DGND	37	-	DGND	73	-	DGND	109	-	DGND
2	O	EXHLTA/CDETP	38	O	XTAL	74	I/O	A18	110	I/O	OAD2
3		EXHOLT	39	I	EXTAL	75	I/O	A19	111	O	OAD3
4	I	L3CLK	40	-	DVDD	76	I/O	D7/TQ4	112	O	OAD4
5	I/O	LSW	41	O	CK12M/24M	77	I/O	D6/TQ3	113	O	OAD5
6	O	RBA	42	I	OSCSEL	78	I/O	D5/TQ2	114	O	OAD6
7	O	RBB	43	I	PD	79	I/O	D4/TQ1	115	O	OAD7
8	I	TBA	44	O	CPUCLK	80	I/O	D3/RQ4	116	O	OAD8
9	I	TBB	45	I/O	$\overline{HALT}$	81	I/O	D2/RQ3	117	O	OAD9
10	I/O	CK1536	46	O	ST	82	I/O	D1/RQ2	118	O	OAD10
11	I/O	CK8L	47	I	$\overline{NMI}$	83	I/O	D0/RQ1	119	O	OAD11
12	I/O	CK64K128K	48	I/O	$\overline{INT0}$	84	I	TEST0	120	O	OAD12
13	I	BCH CLK SEL	49	I	$\overline{RESET}$	85	I	TEST1	121	O	OAD13
14	I/O	RTIO	50	I/O	$\overline{LIR}$	86	I	TEST2	122	O	OAD14
15	I/O	RDIO	51	I/O	$\overline{RD}$	87	I	TEST3	123	O	OAD15
16	I/O	TDIO	52	I/O	$\overline{WR}$	88	O	$\overline{RAMCS}$	124	O	OAD16
17	O	RE	53	I/O	$\overline{ME}$	89	O	$\overline{ROMCS}$	125	O	OAD17
18	-	AVDD	54	I/O	$\overline{IOE}$	90	-	DGND	126	O	OAD18
19	I	LRA	55	I/O	A0	91	I/O	OD0	127	I/O	OAD19
20	I	LRB	56	I/O	A1	92	I/O	OD1	128	-	DVDD
21	O	LTA	57	I/O	A2	93	I/O	OD2	129	I	DMA/IO
22	O	LTB	58	I/O	A3	94	I/O	OD3	130	I	B/W
23	-	AGND	59	I/O	A4	95	I/O	OD4	131	I	CPU1
24	I	MODE M/S	60	I/O	A5	96	I/O	OD5	132	I	CPU2
25	I	RCVSEL	61	I/O	A6	97	I/O	OD6	133	O	$\overline{INTR}$
26	I	TXSEL	62	I/O	A7	98	I/O	OD7	134	I	$\overline{CS}$
27	O	CK4K	63	I/O	A8	99	I/O	OD8	135	O	$\overline{UDS}$
28	O	CK200	64	I/O	A9	100	I/O	OD9	136	I/O	$\overline{DTA}$
29	O	SYNC	65	I/O	A10	101	I/O	OD10	137	I/O	$\overline{LDS}$
30	I	ABIT/VDET	66	I/O	A11	102	I/O	OD11	138	I/O	$\overline{AS}$
31	I	L1ACT	67	I/O	A12	103	I/O	OD12	139	I/O	$\overline{OWR}$
32	I	L2ACT	68	I/O	A13	104	I/O	OD13	140	I/O	$\overline{ORD}$
33	O	$\overline{SDO}$	69	I/O	A14	105	I/O	OD14	141	O	M/$\overline{IO}$
34	O	$\overline{WDT}$	70	I/O	A15	106	I/O	OD15	142		BGA
35	I	CLKINH	71	I/O	A16	107	I/O	OAD0	143	I	HLTA/$\overline{DREQ}$
36	O	CLKSTP	72	I/O	A17	108	I/O	OAD1	144	O	HOLT/$\overline{DRDY}$

INPUT

ABIT/VDET	; ABITSET/ VDET
BCH CLK SEL	; B-CHANNEL CLOCK SELECT
B/W	; BYTE/ WORD SELECT
CLKINH	; CLOCK INHIBIT
CPU1,CPU2	; CPU TYPE SELECT
$\overline{CS}$	; CHIP SELECT
DMA/IO	; DMA/ IO MODE SELECT
$\overline{DREQ}$	; REQUEST FOR TRANSMIT D-CHANNEL
EXTAL	; OSCILLATOR (12.288MHz OR 24.576MHz)
HLTA	; HOLD ACKNOWLEDGEMENT FROM UPPER CPU
L1ACT,L2ACT	; LAYER1,2 ACTIVE
L3CLK	; UPPER CPU SYSTEM CLOCK
LRA,LRB	; LINE RECEIVE A,B
MODE M/S	; MASTER/ SLAVE MODE SELECT
$\overline{NMI}$	; NON MASKABLE INTERRUPT
OSCSEL	; SYSTEM CLOCK SELECT (L: 12.288MHz/ H: 24.576MHz)
PD	; POWER DOWN SET
RCVSEL	; RECEIVE TIMING SELECT
$\overline{RESET}$	; RESET
TBA,TBB	; TRANSMIT B-CHANNEL DATA A,B
TEST0-TEST3	; MODE SET
TQ1-TQ4	; TRANSMIT Q-BIT
TXSEL	; TEST MODE

OUTPUT

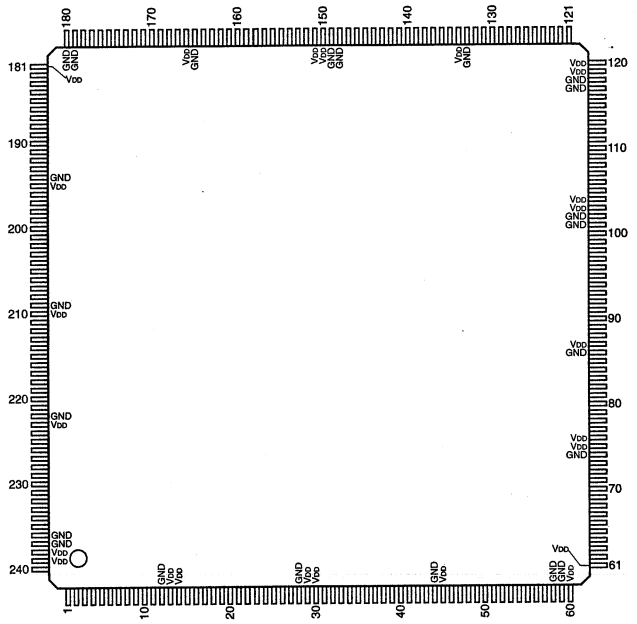
CDETP	; COLLISION DETECT
CK12M/24M	; 12MHz CLOCK
CK200	; 200Hz CLOCK
CK4K	; 4kHz CLOCK
CLKSTP	; CLOCK STOP
CPUCLK	; SYSTEM CLOCK
$\overline{DRDY}$	; READY FOR TRANSMIT D-CHANNEL
HOLT	; HOLD REQUEST TO UPPER CPU
$\overline{INTR}$	; INTERRUPT REQUEST TO UPPER CPU
LTA,LTB	; LINE TRANSMIT A,B
M/$\overline{IO}$	; MEMORY REQUEST TO 8086 BUS
OAD3-OAD18	; ADDRESS BUS FOR UPPER CPU
$\overline{RAMCS}$	; RAM CHIP SELECT
RBA,RBB	; RECEIVE B-CHANNEL DATA A,B
RE	; ECHO BIT RECEIVE
$\overline{ROMCS}$	; ROM CHIP SELECT
RQ1-RQ4	; RECEIVE Q-BIT
$\overline{SDO}$	; SIGNAL DETECT
ST	; STATUS
SYNC	; SYNCHRONIZATION
$\overline{UDS}$	; UPPER DATA STROBE
$\overline{WDT}$	; WATCH DOG TIMER
XTAL	; OSCILLATOR (12.288MHz OR 24.576MHz)

INPUT/OUTPUT

A0-A19	; ADDRESS BUS
$\overline{AS}$	; ADDRESS STROBE
CK1536	; 1.536MHz CLOCK
CK64K/128K	; B-CHANNEL BIT TIMING
CK8K	; B-CHANNEL FRAME TIMING
D0-D7	; DATA BUS
$\overline{DTA}$	; DATA TRANSFER ACKNOWLEDGE
$\overline{HALT}$	; HALT
$\overline{INT0}$	; INTERRUPT 0
$\overline{IOE}$	; I/O ENABLE
$\overline{LDS}$	; LOWER DATA STROBE
$\overline{LIR}$	; LOAD INSTRUCTION REGISTER
LSW	; LAYER1 ACTIVATION SWITCH
$\overline{ME}$	; MEMORY ENABLE
OAD0-OAD2,OAD19	; ADDRESS BUS FOR UPPER CPU
OD0-OD15	; DATA BUS FOR UPPER CPU
$\overline{ORD}$	; READ FOR UPPER CPU
$\overline{OWR}$	; WRITE FOR UPPER CPU
$\overline{RD}$	; READ
RDIO	; RECEIVE D-CHANNEL DATA
RTIO	; D-CHANNEL DATA RECEIVE/ TRANSMIT TIMING CLOCK
TDIO	; TRANSMIT D-CHANNEL DATA
$\overline{WR}$	; WRITE

IIT3104AKAB (IIT)

C-MOS SINGLE CHIP VIDEO CODEC AND
MULTIMEDIA COMMUNICATIONS PROCESSOR
–TOP VIEW–



INPUT

ACLK	; AUDIO PORT SERIAL CLOCK
AIN	; AUDIO PORT SERIAL DATA
ARFS	; AUDIO PORT RECEIVE FRAME SYNC
ATFS	; AUDIO PORT TRANSMIT FRAME SYNC
CPUCLK	; RISC AND SYSTEM CLOCK
DEBUGIRQ	; SYSTEM DEBUG INTERRUPT
HA0–HA2	; HOST ADDRESS BUS
HREAD	; HOST READ
HSYNCCAM	; HORIZONTAL SYNC FOR CAMERA VIDEO PORT
HWRITE	; HOST WRITE
ODDCAM	; ODD/EVEN FIELD SELECT FOR CAMERA VIDEO PORT
PCLK2XCAM	; PIXEL CLOCK; TWO TIMES THE ACTUAL PIXEL CLOCK FOR CAMERA VIDEO PORT
PCLK2XSCN	; PIXEL CLOCK; TWO TIMES THE ACTUAL PIXEL CLOCK FOR SCREEN VIDEO PORT
PCLKQCAM	; PIXEL CLOCK QUALIFIER IN FOR CAMERA VIDEO PORT
PCLKQSCN	; PIXEL CLOCK QUALIFIER IN FOR SCREEN VIDEO PORT
RESET	; SYSTEM RESET
ROMDIS	; DISABLE THE INTERNAL BOOT ROM AND BOOT FROM EXTERNAL ROM LOCATED AT LCE = 0 x 03
TDMCLK	; TDM BUS SERIAL CLOCK
TDMDR	; TDM BUS SERIAL DATA RECEIVE
TDMFS	; TDM BUS FRAME SYNC
TEST1L	; TEST
UVCAM0–7	; UV CHROMINANCE DATA BUS FOR CAMERA VIDEO PORT
VSYNCCAM	; VERTICAL SYNC FOR CAMERA VIDEO PORT
YCAM0–7	; Y LUMINANCE DATA BUS FOR CAMERA VIDEO PORT

OUTPUT

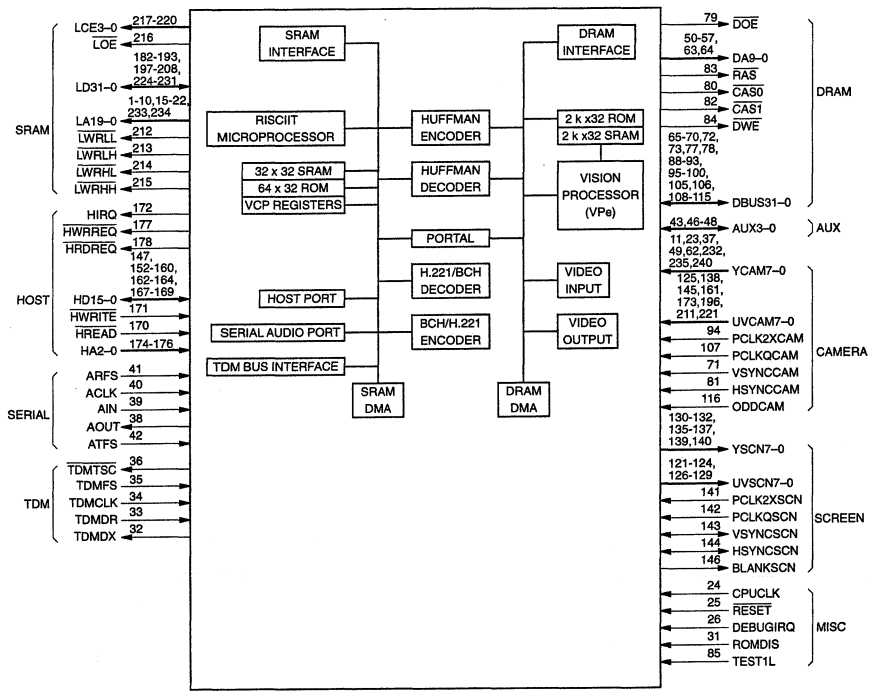
AOUT	; AUDIO PORT SERIAL DATA
BLANKSCN	; BLANKING FOR SCREEN VIDEO PORT
CAS0	; REFERENCE DRAM COLUMN ADDRESS STROBE BANK 0
CAS1	; REFERENCE DRAM COLUMN ADDRESS STROBE BANK 1
DA0–9	; REFERENCE DRAM MULTIPLEXED ADDRESS
DOE	; REFERENCE DRAM OUTPUT ENABLE
DWE	; REFERENCE DRAM WRITE ENABLE
HIRQ	; HOST INTERRUPT REQUEST
HRDREQ	; HOST DMA CHANNEL READ REQUEST
HWRREQ	; HOST DMA CHANNEL WRITE REQUEST
LA0–19	; RISC PORT ADDRESS BUS
LCE0–3	; RISC PORT CHIP ENABLE
LOE	; RISC PORT OUTPUT ENABLE
LWRHH	; RISC PORT WRITE ENABLE BYTE 3
LWRHL	; RISC PORT WRITE ENABLE BYTE 2
LWRLH	; RISC PORT WRITE ENABLE BYTE 1
LWRLL	; RISC PORT WRITE ENABLE BYTE 0
RAS	; REFERENCE DRAM ROW ADDRESS STROBE
TDMDX	; TDM BUS SERIAL DATA TRANSMIT
TDMTSC	; TDM BUS TRISTATE CONTROL
TEST2	; TEST
UVSCN0–7	; UV CHROMINANCE DATA BUS FOR SCREEN VIDEO PORT
YSCN0–7	; Y LUMINANCE DATA BUS FOR SCREEN VIDEO PORT

INPUT/OUTPUT

AUX0–3	; AUXILIARY CONTROL LINES
DBUS0–31	; REFERENCE DRAM DATA BUS
HD0–15	; HOST DATA BUS
HSYNCSCN	; HORIZONTAL SYNC FOR SCREEN VIDEO PORT
LD0–31	; RISC PORT DATA BUS
VSYNCSCN	; VERTICAL SYNC FOR SCREEN VIDEO PORT

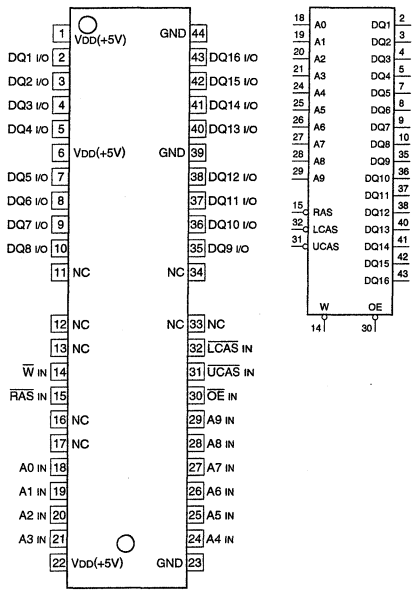
(VDD = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	LA17	41	I	ARFS	81	I	HSYNCCAM	121	O	UVSCN0	161	I	UVCAM3	201	I/O	LD4
2	O	LA16	42	I	ATFS	82	O	CAS1	122	O	UVSCN1	162	I/O	HD10	202	I/O	LD12
3	O	LA15	43	I/O	AUX0	83	O	RAS	123	O	UVSCN2	163	I/O	HD11	203	I/O	LD20
4	O	LA14	44	—	GND	84	O	DWE	124	O	UVSCN3	164	I/O	HD12	204	I/O	LD28
5	O	LA13	45	—	VDD	85	I	TEST1L	125	I	UVCAM0	165	—	GND	205	I/O	LD5
6	O	LA12	46	I/O	AUX1	86	—	GND	126	O	UVSCN4	166	—	VDD	206	I/O	LD13
7	O	LA11	47	I/O	AUX2	87	—	VDD	127	O	UVSCN5	167	I/O	HD13	207	I/O	LD21
8	O	LA10	48	I/O	AUX3	88	I/O	DBUS5	128	O	UVSCN6	168	I/O	HD14	208	I/O	LD29
9	O	LA9	49	I	YCAM6	89	I/O	DBUS21	129	O	UVSCN7	169	I/O	HD15	209	—	GND
10	O	LA8	50	O	DA0	90	I/O	DBUS6	130	O	YSCN0	170	I	HREAD	210	—	VDD
11	I	YCAM3	51	O	DA1	91	I/O	DBUS22	131	O	YSCN1	171	I	HWRITE	211	I	UVCAM6
12	—	GND	52	O	DA2	92	I/O	DBUS7	132	O	YSCN2	172	O	HIRQ	212	O	LWRLL
13	—	VDD	53	O	DA3	93	I/O	DBUS23	133	—	GND	173	I	UVCAM4	213	O	LWRLH
14	—	VDD	54	O	DA4	94	I	PCLK2XCAM	134	—	VDD	174	I	HA0	214	O	LWRHL
15	O	LA7	55	O	DA5	95	I/O	DBUS8	135	O	YSCN3	175	I	HA1	215	O	LWRHH
16	O	LA6	56	O	DA6	96	I/O	DBUS24	136	O	YSCN4	176	I	HA2	216	O	LOE
17	O	LA5	57	O	DA7	97	I/O	DBUS9	137	O	YSCN5	177	O	HWRREQ	217	O	LCE0
18	O	LA4	58	—	GND	98	I/O	DBUS25	138	I	UVCAM1	178	O	HRDREQ	218	O	LCE1
19	O	LA3	59	—	GND	99	I/O	DBUS10	139	O	YSCN6	179	—	GND	219	O	LCE2
20	O	LA2	60	—	VDD	100	I/O	DBUS26	140	O	YSCN7	180	—	GND	220	O	LCE3
21	O	LA1	61	—	VDD	101	—	GND	141	I	PCLK2XSCN	181	—	VDD	221	I	UVCAM7
22	O	LA0	62	I	YCAM7	102	—	GND	142	I	PCLKQSCN	182	I/O	LD0	222	—	GND
23	I	YCAM4	63	O	DA8	103	—	VDD	143	I/O	VSYNCSCN	183	I/O	LD8	223	—	VDD
24	I	CPUCLK	64	O	DA9	104	—	VDD	144	I/O	HSYNCSCN	184	I/O	LD16	224	I/O	LD6
25	I	RESET	65	I/O	DBUS0	105	I/O	DBUS11	145	I	UVCAM2	185	I/O	LD24	225	I/O	LD14
26	I	DEBUGIRQ	66	I/O	DBUS16	106	I/O	DBUS27	146	O	BLANKSCN	186	I/O	LD1	226	I/O	LD22
27	O	TEST2	67	I/O	DBUS1	107	I	PCLKQCAM	147	I/O	HD0	187	I/O	LD9	227	I/O	LD30
28	—	GND	68	I/O	DBUS17	108	I/O	DBUS12	148	—	GND	188	I/O	LD17	228	I/O	LD7
29	—	VDD	69	I/O	DBUS2	109	I/O	DBUS28	149	—	GND	189	I/O	LD25	229	I/O	LD15
30	—	VDD	70	I/O	DBUS18	110	I/O	DBUS13	150	—	VDD	190	I/O	LD2	230	I/O	LD23
31	I	ROMDIS	71	I	VSYNCCAM	111	I/O	DBUS29	151	—	VDD	191	I/O	LD10	231	I/O	LD31
32	O	TDMDX	72	I/O	DBUS3	112	I/O	DBUS14	152	I/O	HD1	192	I/O	LD18	232	I	YCAM0
33	I	TDMDR	73	I/O	DBUS19	113	I/O	DBUS30	153	I/O	HD2	193	I/O	LD26	233	O	LA19
34	I	TDMCLK	74	—	GND	114	I/O	DBUS15	154	I/O	HD3	194	—	GND	234	O	LA18
35	I	TDMFS	75	—	VDD	115	I/O	DBUS31	155	I/O	HD4	195	—	VDD	235	I	YCAM1
36	O	TDMTSC	76	—	VDD	116	I	ODDCAM	156	I/O	HD5	196	I	UVCAM5	236	—	GND
37	I	YCAM5	77	I/O	DBUS4	117	—	GND	157	I/O	HD6	197	I/O	LD3	237	—	GND
38	O	AOUT	78	I/O	DBUS20	118	—	GND	158	I/O	HD7	198	I/O	LD11	238	—	VDD
39	I	AIN	79	O	DOE	119	—	VDD	159	I/O	HD8	199	I/O	LD19	239	—	VDD
40	I	ACLK	80	O	CAS0	120	—	VDD	160	I/O	HD9	200	I/O	LD27	240	I	YCAM2


SRAM
LCE3–0
LOE
LD31–0
LA19–0
LWRLL
LWRLH
LWRHL
LWRHH
HOST
HIRQ
HWRREQ
HRDREQ
HD15–0
HWRITE
HREAD
HA2–0
SERIAL
ARFS
ACLK
AIN
AOUT
ATFS
TDM
TDMTSC
TDMFS
TDMCLK
TDMDR
TDMDX
SRAM INTERFACE
RISCIIT MICROPROCESSOR
32 x 32 SRAM
64 x 32 ROM
VCP REGISTERS
HOST PORT
SERIAL AUDIO PORT
TDM BUS INTERFACE
SRAM DMA
HUFFMAN ENCODER
HUFFMAN DECODER
PORTAL
H.221/BCH DECODER
BCH/H.221 ENCODER
DRAM INTERFACE
2 k x32 ROM
2 k x32 SRAM
VISION PROCESSOR (VPe)
VIDEO INPUT
VIDEO OUTPUT
DRAM DMA
DOE
DA9–0
RAS
CAS0
CAS1
DWE
DBUS31–0
DRAM
AUX3–0
AUX
YCAM7–0
UVCAM7–0
PCLK2XCAM
PCLKQCAM
VSYNCCAM
HSYNCCAM
ODDCAM
CAMERA
YSCN7–0
UVSCN7–0
PCLK2XSCN
PCLKQSCN
VSYNCSCN
HSYNCSCN
BLANKSCN
SCREEN
CPUCLK
RESET
DEBUGIRQ
ROMDIS
TEST1L
MISC

KM416C1200AT-6T (SAMSUNG)

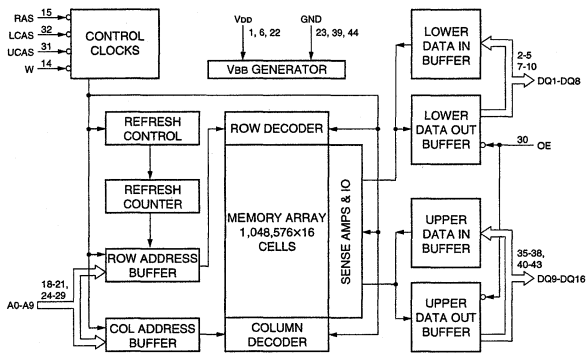
C-MOS 1M×16-BIT DYNAMIC RAM WITH FAST PAGE MODE
-TOP VIEW-



A0-A9 ; ADDRESS INPUTS
DQ1-DQ16 ; DATA INPUTS/OUTPUTS
LCAS ; LOWER COLUMN ADDRESS STROBE INPUT
OE ; DATA OUTPUT ENABLE INPUT
RAS ; ROW ADDRESS STROBE INPUT
UCAS ; UPPER COLUMN ADDRESS STROBE INPUT
W ; READ/WRITE INPUT

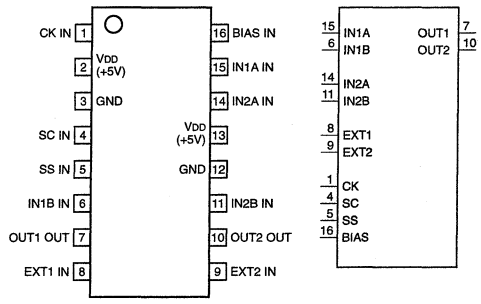
RAS	LCAS	UCAS	W	OE	DQ1-DQ8	DQ9-DQ16	STATE
1	X	X	X	X	HI-Z	HI-Z	STANDBY
0	1	1	X	X	HI-Z	HI-Z	REFRESH
0	0	1	1	0	DQ-OUT	HI-Z	LOWER BYTE READ
0	1	0	1	0	HI-Z	DQ-OUT	UPPER BYTE READ
0	0	0	1	0	DQ-OUT	DQ-OUT	WORD READ
0	0	1	0	1	DQ IN	—	LOWER BYTE WRITE
0	1	0	0	1	—	DQ-IN	UPPER BYTE WRITE
0	0	0	0	1	DQ-IN	DQ-IN	WORD WRITE
0	0	0	1	1	HI-Z	HI-Z	—

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

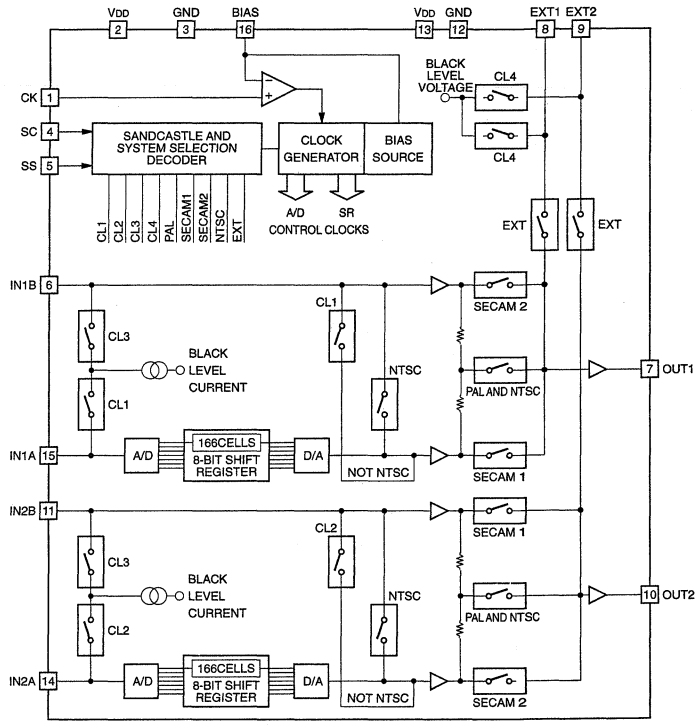


MC44140DWR2 (MOTOROLA)FLAT PACKAGE

C-MOS CHROMA DELAY LINE
–TOP VIEW–



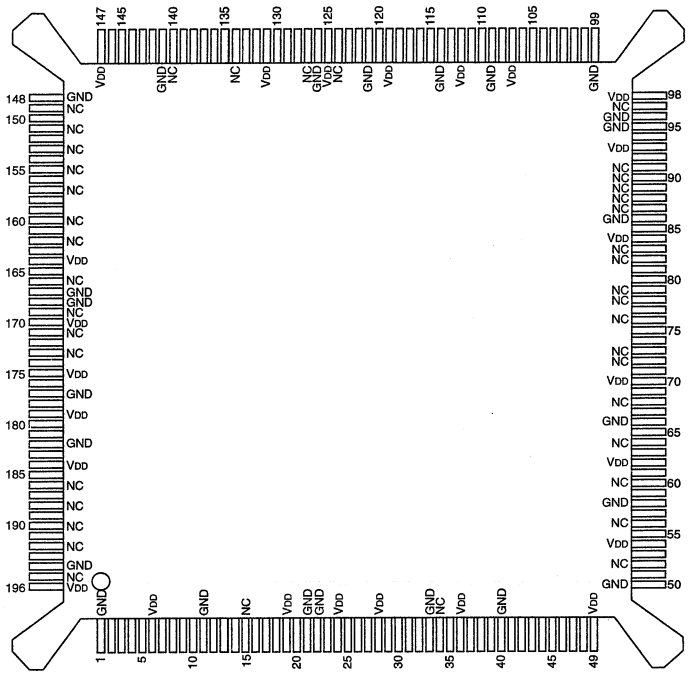
BIAS ; BIAS CURRENT INPUT
CK ; SYSTEM CLOCK INPUT
EXT1, 2 ; EXTARNAL R-Y (EXT1) AND B-Y (EXT2) INPUTS
IN1A, B ; R-Y INPUTS
IN2A, B ; B-Y INPUTS
OUT1, 2 ; R-Y (OUT1) AND B-Y (OUT2) OUTPUTS
SS ; SYSTEM SELECT INPUT
SC ; SANDCASTLE PULSE INPUT



KU80486SXSA-25 (IJC)

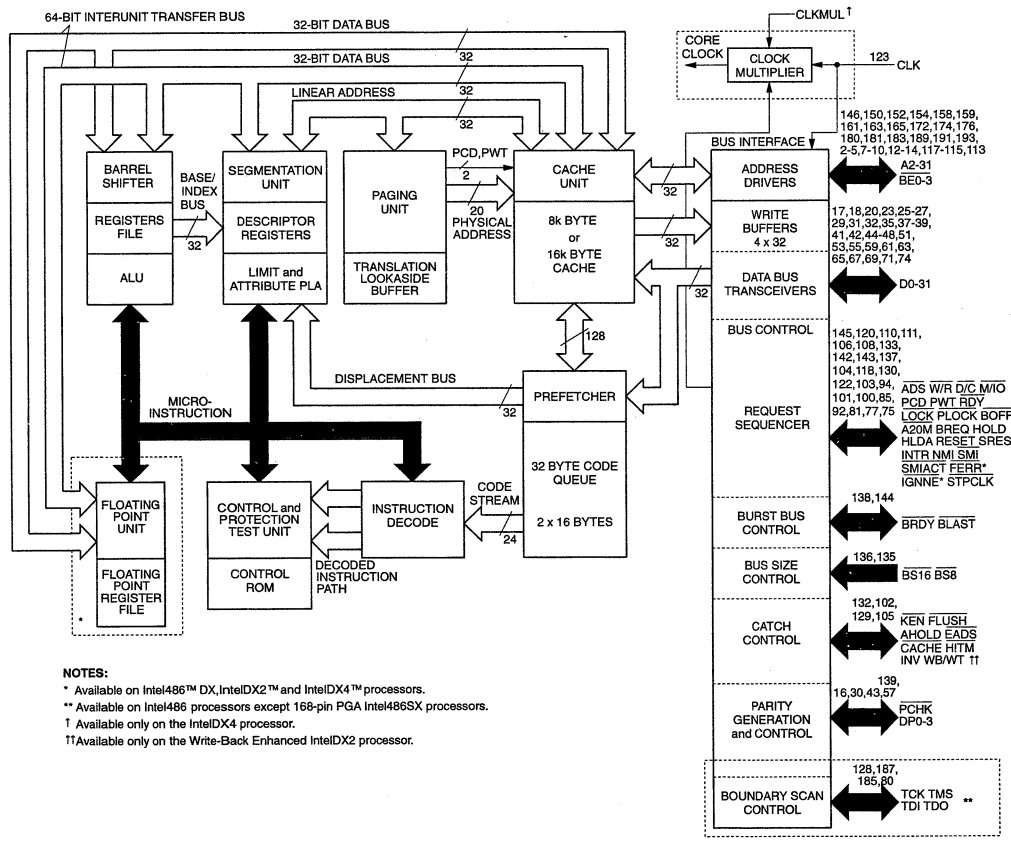
MICROPROCESSOR

-TOP VIEW-



(VDD = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	GND	41	I/O	D14	81	O	FERR	121	-	GND	161	I/O	A8
2	I/O	A21	42	I/O	D15	82	-	NC	122	O	HLDA	162		NC
3	I/O	A22	43	I/O	DP2	83	-	NC	123	I	CLK	163	I/O	A9
4	I/O	A23	44	I/O	D16	84	-	VDD	124	-	NC	164	-	VDD
5	I/O	A24	45	I/O	D17	85	I	SMI	125	-	VDD	165	I/O	A10
6	-	VDD	46	I/O	D18	86	-	GND	126	-	GND	166	-	NC
7	I/O	A25	47	I/O	D19	87	-	NC	127	-	NC	167	-	GND
8	I/O	A26	48	I/O	D20	88	-	NC	128	I	TCK	168	-	GND
9	I/O	A27	49	-	VDD	89	-	NC	129	I	AHOLD	169	-	NC
10	I/O	A28	50	-	GND	90	-	NC	130	I	HOLD	170	-	VDD
11	-	GND	51	I/O	D21	91	-	NC	131	-	VDD	171	-	NC
12	I/O	A29	52	-	NC	92	O	SMIACT	132	I	KEN	172	I/O	A11
13	I/O	A30	53	I/O	D22	93	-	VDD	133	I	RDY	173	-	NC
14	I/O	A31	54	-	VDD	94	I	SRESET	134	-	NC	174	I/O	A12
15	-	NC	55	I/O	D23	95	-	GND	135	I	BS8	175	-	VDD
16	I/O	DP0	56	-	NC	96	-	GND	136	I	BS16	176	I/O	A13
17	I/O	D0	57	I/O	DP3	97	-	NC	137	I	BOFF	177	-	GND
18	I/O	D1	58	-	GND	98	-	VDD	138	I	BRDY	178	I/O	A14
19	-	VDD	59	I/O	D24	99	-	GND	139	O	PCHK	179	-	VDD
20	I/O	D2	60	-	NC	100	I	NMI	140	-	NC	180	I/O	A15
21	-	GND	61	I/O	D25	101	I	INTR	141	-	GND	181	I/O	A16
22	-	GND	62	-	VDD	102	I	FLUSH	142	O	LOCK	182	-	GND
23	I/O	D3	63	I/O	D26	103	I	RESET	143	O	PLOCK	183	I/O	A17
24	-	VDD	64	-	NC	104	I	A20M	144	O	BLAST	184	-	VDD
25	I/O	D4	65	I/O	D27	105	I	EADS	145	O	ADS	185	I	TDI
26	I/O	D5	66	-	GND	106	O	PCD	146	O	A2	186	-	NC
27	I/O	D6	67	I/O	D28	107	-	VDD	147	-	VDD	187	I	TMS
28	-	VDD	68	-	NC	108	O	PWT	148	-	GND	188	-	NC
29	I/O	D7	69	I/O	D29	109	-	GND	149	-	NC	189	I/O	A18
30	I/O	DP1	70	-	VDD	110	O	D/C	150	O	A3	190	-	NC
31	I/O	D8	71	I/O	D30	111	O	M/IO	151	-	NC	191	I/O	A19
32	I/O	D9	72	-	NC	112	-	VDD	152	I/O	A4	192	-	NC
33	-	GND	73	-	NC	113	O	BE3	153	-	NC	193	I/O	A20
34	-	NC	74	I/O	D31	114	-	GND	154	I/O	A5	194	-	GND
35	I/O	D10	75	I	STPCLK	115	O	BE2	155	-	NC	195	-	NC
36	-	VDD	76	-	NC	116	O	BE1	156	I	UP	196	-	VDD
37	I/O	D11	77	I	IGNNE	117	O	BE0	157	-	NC			
38	I/O	D12	78	-	NC	118	O	BREQ	158	I/O	A6			
39	I/O	D13	79	-	NC	119	-	VDD	159	I/O	A7			
40	-	GND	80	O	TDO	120	O	W/R	160	-	NC			



INPUT

A20M	;ADDRESS BIT 20 MASK
AHOLD	;ADDRESS HOLD
BOFF	;BACKOFF
BRDY	;BURST READY
BS8,BS16	;BUS SIZE CONTROL
CLK	;CLOCK
EADS	;VALID EXTERNAL ADDRESS
FLUSH	;CACHE FLUSH
HOLD	;BUS HOLD REQUEST
IGNNE	;IGNORE NUMERIC ERROR
INTR	;MASKABLE INTERRUPT
KEN	;CACHE ENABLE
NMI	;NON-MASKABLE INTERRUPT
RDY	;NON-BURST READY
RESET	;RESET
SMI	;SYSTEM MANAGEMENT INTERRUPT
SRESET	;SRESET
STPCLK	;STOP CLOCK REQUEST
TCK	;TEST CLOCK
TDI	;TEST DATA
TMS	;TEST MODE SELECT
UP	;UPGRADE PRESENT

OUTPUT

A2,3	;ADDRESS LINES
ADS	;ADDRESS STATUS
BE0-3	;BYTE ENABLE
BLAST	;BURST LAST
BREQ	;BUS REQUEST
D/C	;DATA/CONTROL
FERR	;FLOATING POINT ERROR
HLDA	;HOLD ACKNOWLEDGE
LOCK	;BUS LOCK
M/IO	;MEMORY/INPUT-OUTPUT
PCHK	;PARITY STATUS
PCD	;PAGE CACHE DISABLE
PLOCK	;PSEUDO-LOCK
PWT	;PAGE WRITE-THROUGH
SMIACT	;SYSTEM MANAGEMENT INTERRUPT ACTIVE
TDO	;TEST DATA
W/R	;WRITE/READ

INPUT/OUTPUT

A4-31	;ADDRESS LINES
D0-31	;DATA LINES
DP0-3	;DATA PARITY

NOTES:

* Available on Intel486™ DX,IntelDX2™ and IntelDX4™ processors.

** Available on Intel486 processors except 168-pin PGA Intel486SX processors.

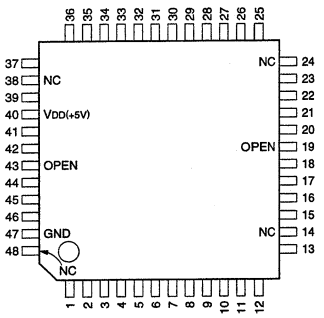
† Available only on the IntelDX4 processor.

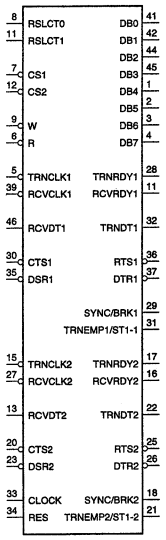
†† Available only on the Write-Back Enhanced IntelDX2 processor.

MB89371APF (FUJITSU)

C-MOS DUAL SERIAL DATA TRANSMITTER / RECEIVER UNIT

-TOP VIEW-





NC ; NON CONNECT TERMINAL (OPEN)
OPEN ; NEVER CONNECT TERMINAL

(VDD = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I/O	DB4	17	O	TRNRDY2	33	I	CLOCK
2	I/O	DB5	18	I/O	SYNC/BRK2	34	I	RST
3	I/O	DB6	19	—	OPEN	35	I	DSR1
4	I/O	DB7	20	I	CTS2	36	O	RTS1
5	I	TRNCLK1	21	O	TRNEMP2/ST1-2	37	I	DTR1
6	I	W	22	O	TRNDT2	38	—	NC
7	I	CS1	23	O	DSR2	39	I	RCVCLK1
8	I	RSLCT0	24	—	NC	40	—	VDD
9	I	R	25	O	RTS2	41	I/O	DB0
10	O	RCVRDY1	26	O	DTR2	42	I/O	DB1
11	I	RSLCT1	27	I	RCVCLK2	43	—	OPEN
12	I	CS2	28	O	TRNRDY1	44	I/O	DB2
13	I	RCVDT2	29	I/O	SYNC/BRK1	45	I/O	DB3
14	—	NC	30	I	CTS1	46	I	RCVDT1
15	I	TRNCLK2	31	O	TRNEMP1/ST1-1	47	—	GND
16	O	RCVRDY2	32	O	TRNDT1	48	—	NC

INPUT

CLOCK	;	CLOCK (4,9152MHz) FOR REFERENCE OF TIMING.
CSn	;	CHIP SELECT OF CHANNELn.(n = 1 OR 2)
CTSn	;	CLEAR TO SEND OF CHANNELn.(n = 1 OR 2)
DSRn	;	DATA SET READY OF CHANNELn.(n = 1 OR 2)
R	;	READ ENABLE
RCVCLKn	;	RECEIVER CLOCK OF CHANNELn.(n = 1 OR 2)
RCVDTn	;	RECEIVE DATA OF CHANNELn.(n = 1 OR 2)
RSLCTn	;	REGISTERS SELECT LINEn.(n = 0 AND 1)
RST	;	RESET PULSE
TRNCLKn	;	TRANSMITTER CLOCK OF CHANNELn.(n = 1 OR 2)
W	;	WRITE ENABLE

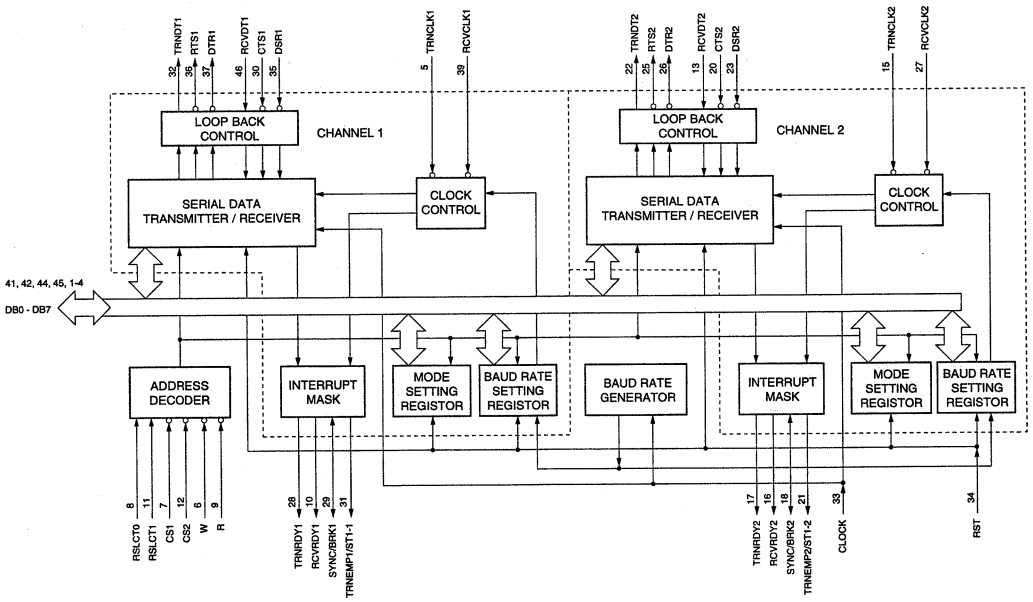
OUTPUT

DTRn	;	DATA TERMINAL READY OF CHANNELn.(n = 1 OR 2)
RCVRDYn	;	RECEIVER READY OF CHANNELn.(n = 1 OR 2)
RTSn	;	REQUEST TO SEND OF CHANNELn.(n = 1 OR 2)
TRNDTn	;	TRANSMIT DATA OF CHANNELn.(n = 1 OR 2)
TRNEMPn/ST1-n	;	TRANSMITTER EMPTY / BAUD RATE CLOCK OUT OF CHANNELn.(n = 1 OR 2)
TRNRDYn	;	TRANSMIT READY OF CHANNELn.(n = 1 OR 2)

INPUT/OUTPUT

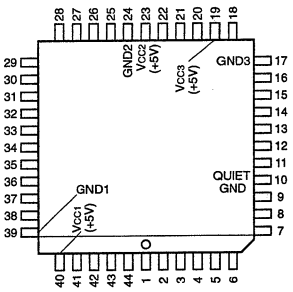
DBn	;	DATA BUS LINEn.(n = 0 TO 7)
SYNC/BRKn	;	SYNCHRONIZATION CHARACTOR / BREAK CODE DETECT OF CHANNELn.(n = 1 OR 2)

NC	;	NON CONNECT TERMINAL (OPEN)
OPEN	;	NEVER CONNECT TERMINAL

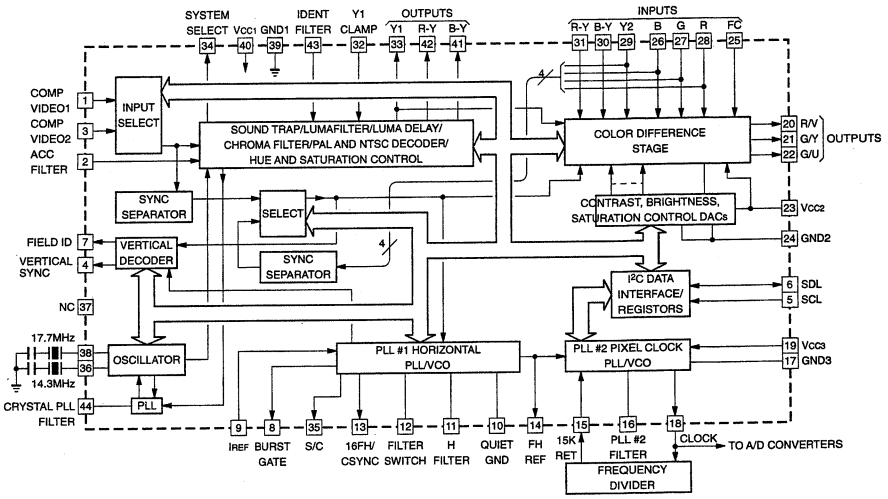


MC44011FN (MOTOROLA)FLAT PACKAGE

BUS CONTROLLED MULTISTANDARD VIDEO PROCESSOR
-TOP VIEW-

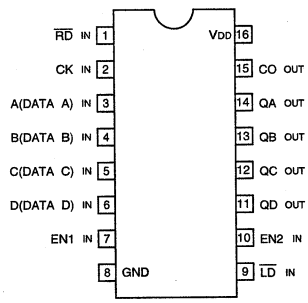


PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	COMP VIDEO1	23	—	VCC2
2	I	ACC FILTER	24	—	GND2
3	I	COMP VIDEO2	25	I	FC
4	O	VERTICAL SYNC	26	I	B
5	I	SCL	27	I	G
6	O	SDL	28	I	R
7	O	FIELD ID	29	I	Y2
8	O	BURST GATE	30	I	B-Y
9	I	IREF	31	I	R-Y
10	—	QUIET GND	32	I	Y1 CLAMP
11	I	H FILTER	33	O	Y1
12	I	FILTER SWITCH	34	O	SYSTEM SELECT
13	O	16FH/C SYNC	35	O	S/C
14	O	FH REF	36	I	XTAL2 (17.7 MHz)
15	I	15K RET	37	—	NC
16	I	PLL #2 FILTER	38	I	XTAL1 (14.3 MHz)
17	—	GND3	39	—	GND1
18	O	CLOCK	40	—	VCC1
19	—	VCC3	41	O	B-Y
20	O	R/V	42	O	R-Y
21	O	G/Y	43	I	IDENT FILTER
22	O	B/U	44	I	CRYSTAL PLL FILTER



MC74HC163AF (MOTOROLA)FLAT PACKAGE
SN74HC163ANS-E05
TC74VHC163F (TOSHIBA)FLAT PACKAGE
TC74VHC163F(EL)

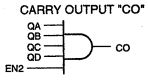
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
—TOP VIEW—



MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

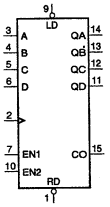
CARRY OUTPUT "CO"



CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

NOTE:

TYPE	VDD
HC	+2 to +6V
AC/VHC	+2 to +5.5V
HCT/ACT/FCT	+5V

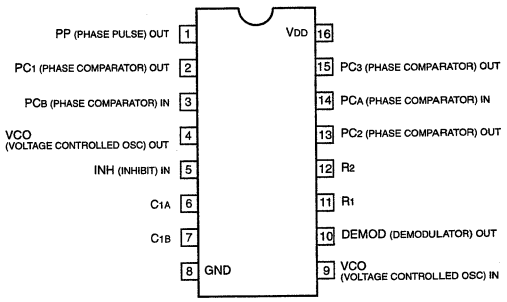


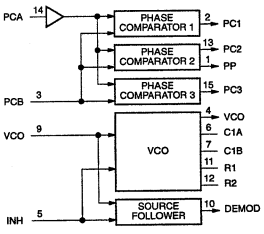
COUNT SEQUENCE

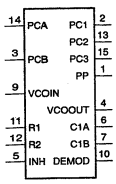
COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

MM74HC4046M (NSC)
MM74HC4046MX

C-MOS PHASE LOCKED LOOP
-TOP VIEW-

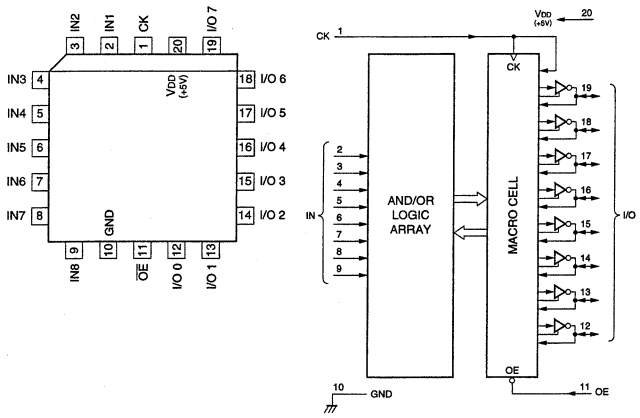






PALCE16V8-15JC (LATTICE)

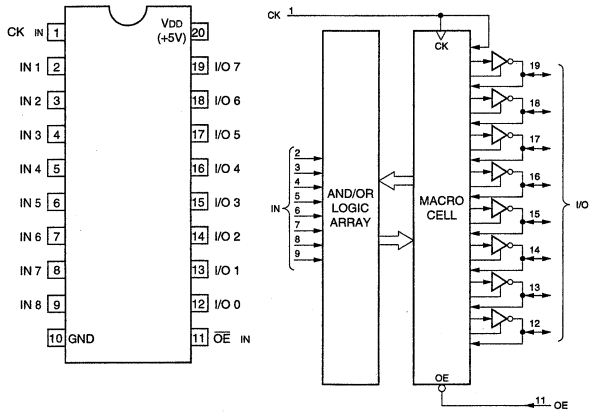
C-MOS ELECTRICALLY ERASABLE PROGRAMMABLE LOGIC DEVICE
-TOP VIEW-



*ABOVE DIAGRAM SHOWS CONDITIONS BEFORE PROGRAMMING.

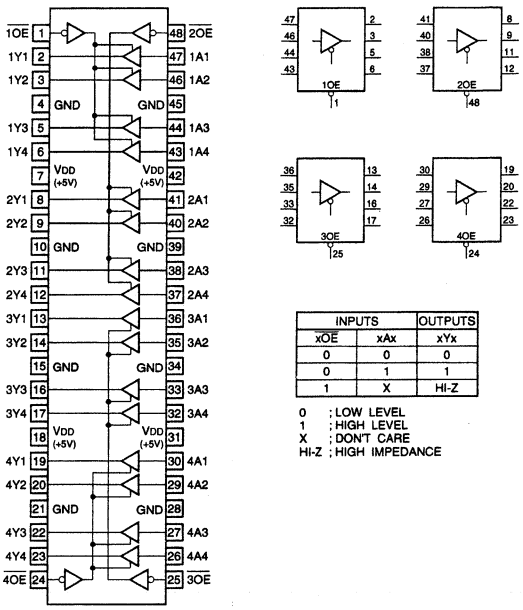
PALCE16V8H-15SC (ADVANCED MICRO DEVICES)

C-MOS ELECTRICALLY ERASABLE PROGRAMMABLE LOGIC DEVICE
—TOP VIEW—



PI74FCT162Q244ATAX (PERICOM SEMICONDUCTOR CORPORATION)

C-MOS 16-BIT BUFFER/DRIVER
– TOP VIEW –

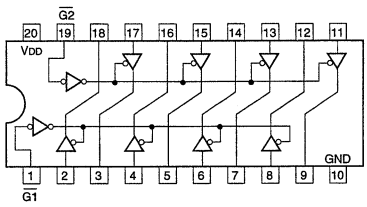


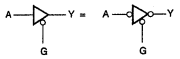
INPUTS		OUTPUTS
$\overline{xOE}$	xAx	xYx
0	0	0
0	1	1
1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

PI74FCT2244TLX (PERICOM SEMICONDUCTOR CORPORATION)
SN74LVC244APW-E05 (TI)
TC74VHC244F (TOSHIBA)FLAT PACKAGE
TC74VHC244F(EL)
TC74VHCT244F(EL) (TOSHIBA)FLAT PACKAGE

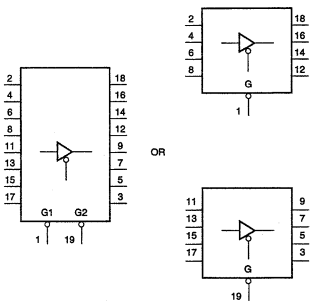
C-MOS BUS BUFFER WITH 3-STATE OUTPUTS
-TOP VIEW-





G	A	Y
0	0	0
0	1	1
X	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE



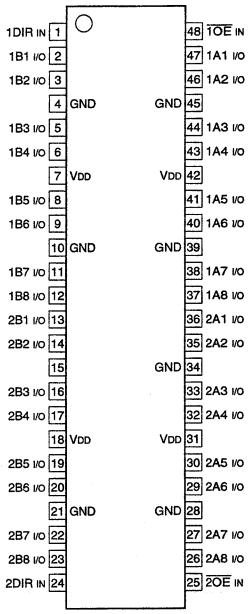
NOTE:

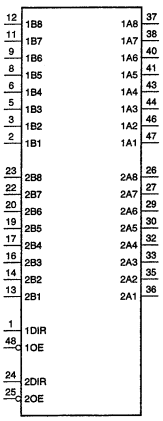
TYPE	VDD
74HC 40H	+2 to +6V
74ACT 74BCT 74FCT 74HCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
74AC/74VHC	+2 to +5.5V

PI74FCT162Q245ATAX (PERICOM SEMICONDUCTOR CORPORATION)

C-MOS 16-BIT BIDIRECTIONAL TRANSCEIVER

-TOP VIEW-



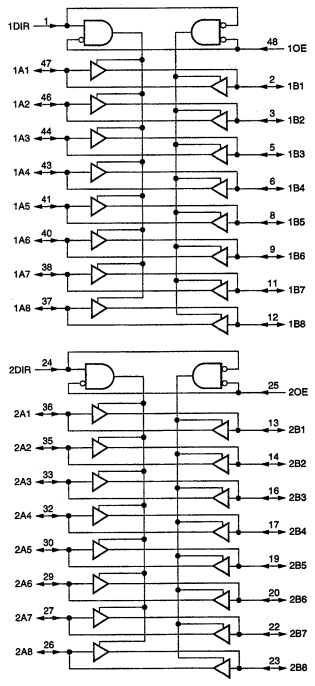


INPUTS		OUTPUTS
$\overline{xOE}$	xDIR	
0	0	BUS B DATA TO BUS A
0	1	BUS A DATA TO BUS B
1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

NOTE :

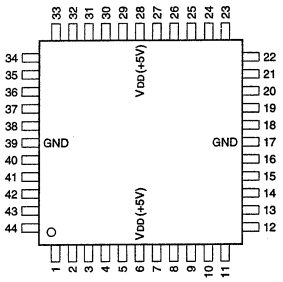
TYPE	VDD
IDT74FCT PI74FCT SN74LVC SN74LVT	+5V
74LCX	+2 to +3.6V



PLSI2032-80LJ (LATTICE)

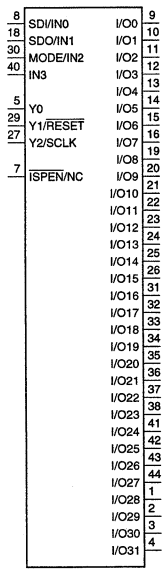
C-MOS HIGH-DENSITY PROGRAMMABLE LOGIC

- TOP VIEW -



(VDD=+5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I/O	I/O28	23	I/O	I/O12
2	I/O	I/O29	24	I/O	I/O13
3	I/O	I/O30	25	I/O	I/O14
4	I/O	I/O31	26	I/O	I/O15
5	I	Y0	27	I	Y2/SCLK
6	–	VDD	28	–	VDD
7	I	$\overline{ISPEN}$/NC	29	I	Y1/$\overline{RESET}$
8	I	SDI/IN0	30	I	MODE/IN2
9	I/O	I/O0	31	I/O	I/O16
10	I/O	I/O1	32	I/O	I/O17
11	I/O	I/O2	33	I/O	I/O18
12	I/O	I/O3	34	I/O	I/O19
13	I/O	I/O4	35	I/O	I/O20
14	I/O	I/O5	36	I/O	I/O21
15	I/O	I/O6	37	I/O	I/O22
16	I/O	I/O7	38	I/O	I/O23
17	–	GND	39	–	GND
18	I/O	SDO/IN1	40	I	IN3
19	I/O	I/O8	41	I/O	I/O24
20	I/O	I/O9	42	I/O	I/O25
21	I/O	I/O10	43	I/O	I/O26
22	I/O	I/O11	44	I/O	I/O27



INPUT

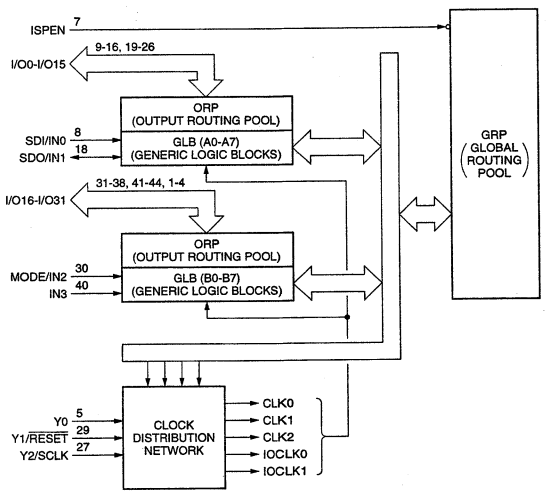
IN0-IN3 ; INPUT
$\overline{ISPEN}$; IN-SYSTEM PROGRAMMING ENABLE
MODE ; MODE
$\overline{RESET}$; ACTIVE LOW (0) RESET
SCLK ; SERIAL CLOCK
SDI ; SERIAL DATA IN
Y0-Y3 ; INPUT CLOCK

OUTPUT

SDO ; SERIAL DATA OUT

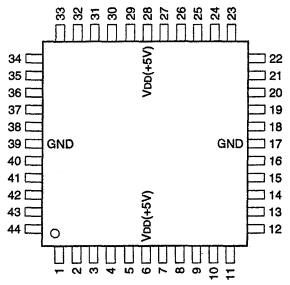
INPUT/OUTPUT

I/O0-I/O31 ; INPUT/OUTPUT



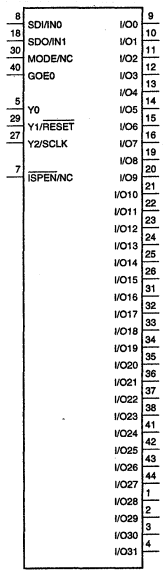
PLSI2032-80LT44 (LATTICE SEMICONDUCTOR)

C-MOS HIGH-DENSITY PROGRAMMABLE LOGIC
-TOP VIEW-



(VDD = +5V)

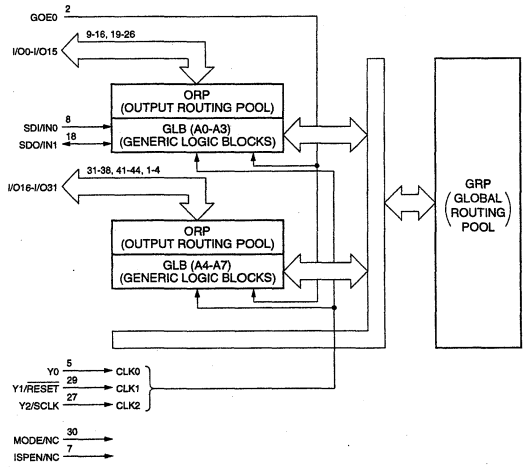
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I/O	I/O28	12	I/O	I/O3	23	I/O	I/O12	34	I/O	I/O19
2	I/O	I/O29	13	I/O	I/O4	24	I/O	I/O13	35	I/O	I/O20
3	I/O	I/O30	14	I/O	I/O5	25	I/O	I/O14	36	I/O	I/O21
4	I/O	I/O31	15	I/O	I/O6	26	I/O	I/O15	37	I/O	I/O22
5	I	Y0	16	I/O	I/O7	27	I	Y2/SCLK	38	I/O	I/O23
6	—	VDD	17	—	GND	28	—	VDD	39	—	GND
7	I	$\overline{ISPEN}$/NC	18	I/O	SDO/IN1	29	I	Y1/$\overline{RESET}$	40	I	GOE0
8	I	SDI/IN0	19	I/O	I/O8	30	I	MODE/NC	41	I/O	I/O24
9	I/O	I/O0	20	I/O	I/O9	31	I/O	I/O16	42	I/O	I/O25
10	I/O	I/O1	21	I/O	I/O10	32	I/O	I/O17	43	I/O	I/O26
11	I/O	I/O2	22	I/O	I/O11	33	I/O	I/O18	44	I/O	I/O27



INPUT
GOE0 ; GLOBAL OUTPUT ENABLE
IN0, IN1 ; INPUT
$\overline{ISPEN}$; IN-SYSTEM PROGRAMMING ENABLE
MODE ; MODE
$\overline{RESET}$; RESET
SCLK ; SERIAL CLOCK
SDI ; SERIAL DATA IN
Y0-Y2 ; INPUT CLOCK

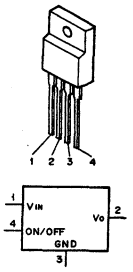
OUTPUT
SDO ; SERIAL DATA OUT

INPUT/OUTPUT
I/O0-I/O31 ; INPUT/OUTPUT



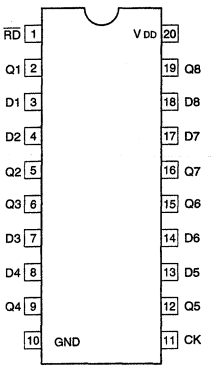
PQ05RF11 (SHARP)+5V

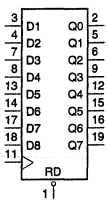
POSITIVE VOLTAGE REGULATOR (1A)



SN74ABT273PW-E05 (TI)

C-MOS OCTAL D-TYPE FLIP-FLOPS WITH RESET
- TOP VIEW -





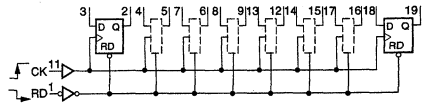
EACH FLIP-FLOP

INPUT			OUTPUT
RD	CX	D	Q
0	X	X	0
1	↑	0	0
1	↑	1	1
1	0	X	Qo

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
Qo ; NO CHANGE

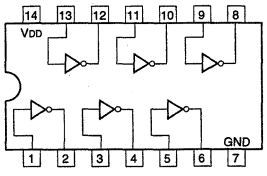
NOTE :

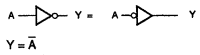
TYPE	VDD
ACT / HCT	+5V
TC74AC / TC74VHC	+2 to +5.5V
OTHER TYPES	+2 to +6V



SN74HC04ANS (TI)FLAT PACKAGE
SN74HC04ANS-E05
SN74HCT04ANS-E05 (TI)FLAT PACKAGE
SN74HCU04ANS-E20 (TI)FLAT PACKAGE
TC74VHC04F (TOSHIBA)FLAT PACKAGE
TC74VHC04F(EL)
TC74VHCT04F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS HEX INVERTERS
-TOP VIEW-





Y = $\overline{A}$

A	Y
0	1
1	0

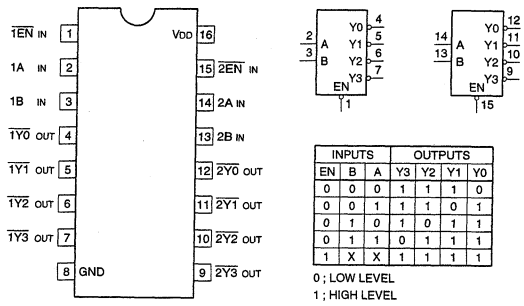
0 ; LOW LEVEL
1 ; HIGH LEVEL

NOTE:

TYPE	VDD
74AC/74VHC/74VHCT	+2 to +5.5V
74ACT/74HCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
OTHER TYPE	+2 to +6V

SN74HC139ANS (TI)FLAT PACKAGE
SN74HC139ANS-E05

C-MOS DUAL 2-TO-4 DECODER/DEMULTIPLEXER
- TOP VIEW -



INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

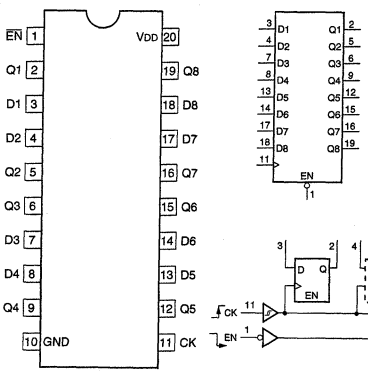
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

NOTE :

TYPE	VDD
TC74AC/TC74VHC	+2 to +5.5V
HCT/ACT	+5V
OTHER TYPES	+2 to +6V

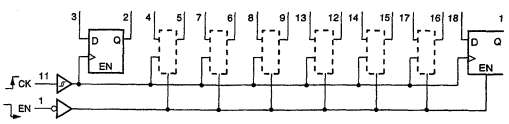
SN74HC374ANS (TI)FLAT PACKAGE
SN74HC374ANS-E05
SN74HCT374ANS-E05 (TI)FLAT PACKAGE
TC74VHC374F (TOSHIBA)FLAT PACKAGE
TC74VHC374F(EL)
TC74VHCT374F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP
-TOP VIEW-



INPUTS			OUT
EN	D	CK	
0	1	↑	1
0	0	↑	0
0	X	0	Q0
1	X	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

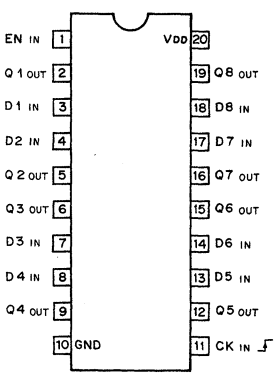


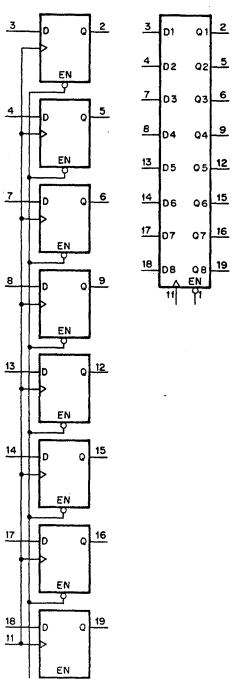
NOTE :

TYPE	VDD
74AC/74HC	+2 to +6V
74ACT/74BCT/74FCT /74HCT	+5V
74VHC	+2 to +5.5V

SN74HC377ANS (TI)
SN74HC377ANS-E05

C-MOS OCTAL D-TYPE FLIP-FLOPS WITH ENABLE
– TOP VIEW –





EACH FLIP-FLOP

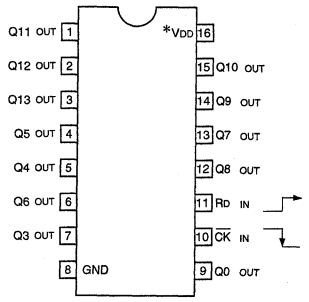
INPUTS			OUT
EN	CK	D	Q
1	X	X	Q0
0	↑	1	1
0	↑	0	0
X	0	X	Q0

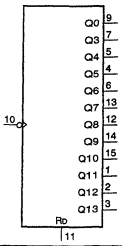
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TYPE	VDD
74ACT TYPES 74FCT TYPES	+ 5V
OTHER TYPES	+ 2V to + 6V

SN74HC4020ANS (TI)FLAT PACKAGE
SN74HC4020ANS-E05

C-MOS 14-STAG RIPPLE-CARRY BINARY COUNTER/DRIVER
—TOP VIEW—





*

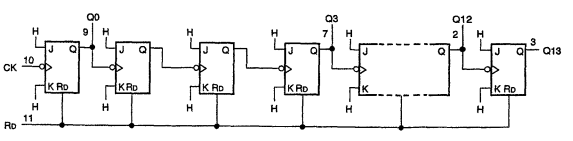
TYPE	VDD
HC4020	+2 to +6V
14020, 4020, 84020	+3 to +18V

COUNT		BINARY OUTPUTS											
		Q13	Q12	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q0
0	0000	0	0	0	0	0	0	0	0	0	0	0	0
1	0001	0	0	0	0	0	0	0	0	0	0	0	1
2	0002	0	0	0	0	0	0	0	0	0	0	1	0
3	0003	0	0	0	0	0	0	0	0	0	0	1	1
4	0004	0	0	0	0	0	0	0	0	0	1	0	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
16380	4FFC	1	1	1	1	1	1	1	1	1	1	1	0
16381	4FFD	1	1	1	1	1	1	1	1	1	1	1	1
16382	4FFE	1	1	1	1	1	1	1	1	1	1	1	0
16383	4FFF	1	1	1	1	1	1	1	1	1	1	1	1

IN HEXADECIMAL
IN DECIMAL

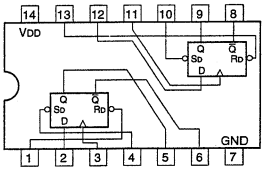
0 ; LOW LEVEL
1 ; HIGH LEVEL

RD	Q13-Q0
1	ALL LOW
0	COUNT



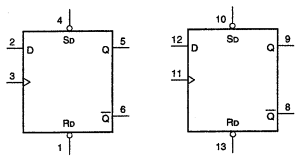
SN74HC74ANS (TI)FLAT PACKAGE
SN74HC74ANS-E05
SN74HCT74ANS-E05 (TI)FLAT PACKAGE
TC74VHC74F(EL) (TOSHIBA)

C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET
-TOP VIEW-



INPUTS				OUTPUTS	
$\overline{SD}$	$\overline{RD}$	CK	D	Qn+1	$\overline{Qn+1}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
1	1	↓	1	1	0
1	1	↓	0	0	1
1	1	0	X	Qn	$\overline{Qn}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

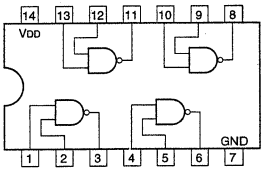


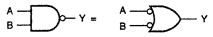
NOTE:

TYPE	VDD
74HCT/74ACT	+4.5 to +5.5V
74LVC	+2.7 to +3.6V
74AC/74VHC	+2 to +5.5V
OTHERS	+2 to +6V

SN74HCT00ANS-E05 (TI)FLAT PACKAGE
TC74VHCT00F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATES
-TOP VIEW-





$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

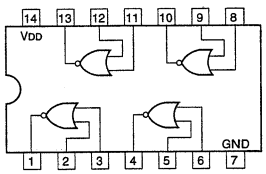
0 ; LOW LEVEL
1 ; HIGH LEVEL

NOTE:

TYPE	VDD
74AC/74VHC	+2 to +5.5V
74ACT/74HCT/74VHCT	+4.5 to +5.5V
LCX	+2 to +3.6V
OTHER TYPES	+2 to +6V

SN74HCT02ANS-E05 (TI)FLAT PACKAGE
TC74VHC02F (TOSHIBA)FLAT PACKAGE
TC74VHC02F(EL)

C-MOS QUAD 2-INPUT NOR GATES
-TOP VIEW-



$Y = \overline{A + B} = \overline{A} \cdot \overline{B}$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

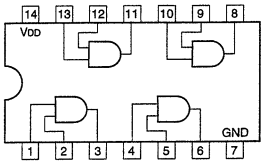
0 ; LOW LEVEL
1 ; HIGH LEVEL

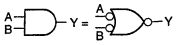
NOTE:

TYPE	VDD
74HC	+2 to +6V
74AC/74VHC	+2 to +5.5V
74HCT/74ACT	+4.5 to +5.5V
74LCX	+2 to +3.6V

SN74HCT08ANS-E05 (TI)
TC74VHCT08F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS QUAD 2-INPUT AND GATE
- TOP VIEW -





$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

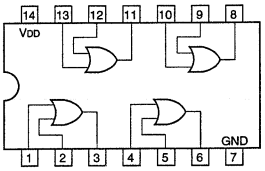
0 ; LOW LEVEL
1 ; HIGH LEVEL

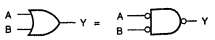
NOTE :

TYPE	VDD
AC	+2 to +5.5V
TC40H	+2 to +8V
ACT/HCT	+5V
OTHER TYPES	+2 to +6V

SN74HCT32ANS-E05 (TI)FLAT PACKAGE

C-MOS QUAD 2-INPUT OR GATES
-TOP VIEW-





$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

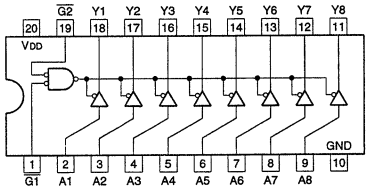
0 ; LOW LEVEL
1 ; HIGH LEVEL

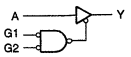
NOTE:

TYPE	VDD
74AC/74VHC	+2 to +5.5V
74HC	+2 to +6V
74HCT	+4.5 to +5.5V

SN74HCT541ANS (TI)FLAT PACKAGE
SN74HCT541ANS-E05
TC74VHCT541F (TOSHIBA)FLAT PACKAGE
TC74VHCT541F(EL)

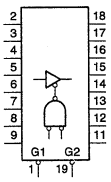
C-MOS BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -





G1	G2	A	Y
0	0	0	1
0	0	1	0
1	X	X	HI-Z
X	1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

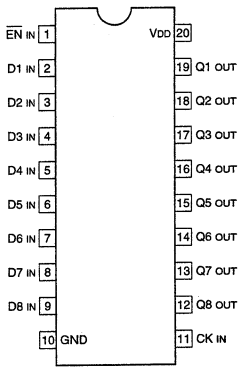


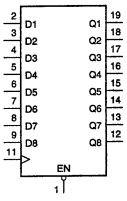
NOTE :

TYPE	VDD
TC74AC/TC74VHC	+2 to +5.5V
ABT/ACT/BCT/HCT/VHCT	+5V
OTHER TYPES	+2 to +6V

SN74HCT574ANS (TI)FLAT PACKAGE
SN74HCT574ANS-E05

C-MOS 3-STATE D-TYPE EDGE-TRIGGERED FLIP-FLOP
-TOP VIEW-

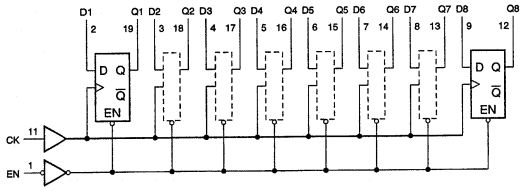




EACH FLIP-FLOP

INPUTS			OUT
EN	CK	D	Q
0	↑	1	1
0	↑	0	0
0	↓	×	Q0
1	×	×	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
× ; DON'T CARE
HI-Z ; HIGH IMPEDANCE
Q0 ; NO CHANGE

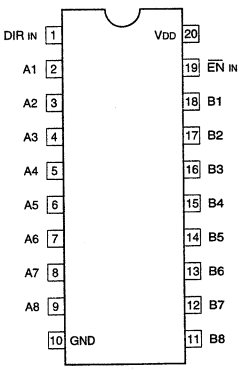


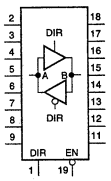
NOTE;

TYPE	VDD
74HC	+2 to +6V
74AC/74VHC	+2 to +5.5V
74ACT/74FCT/74HCT	+4.5 to +5.5V
74LCX	+2 to 3.6V
74LVC	+2.7 to 3.6V

SN74LVC245APW-E05 (TI)
TC74VHCT245F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
-TOP VIEW-



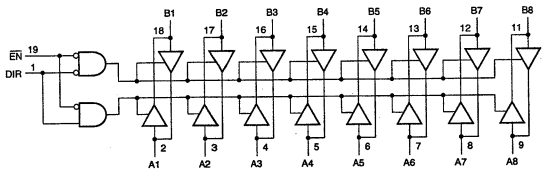


EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

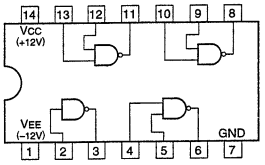
NOTE:

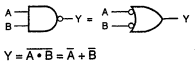
TYPE	VDD
74HC	+2 to +6V
74ABT 74ACT 74BCT 74HCT	+4.5 to +5.5V
74AC 74VHC	+2 to +5.5V
74LCX	+2 to +3.6V
74LVT	+2.7 to +3.6V



SN75188NS (TI)FLAT PACKAGE
SN75188NS-E05

2-INPUT (1-INPUT) POSITIVE-NAND LINE DRIVER
-TOP VIEW-





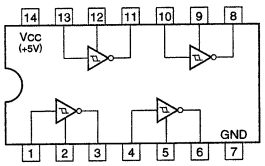
$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

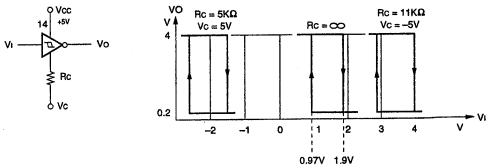
0 ; LOW LEVEL
1 ; HIGH LEVEL

SN75189ANS (TI)FLAT PACKAGE
SN75189ANS-E05

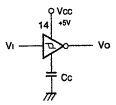
QUADRUPLE LINE RECEIVER
-TOP VIEW-



INPUT THRESHOLD SHIFTING

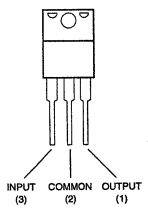


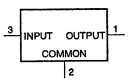
INPUT NOISE FILTERING



TA7809S (TOSHIBA)+9V(1 A)

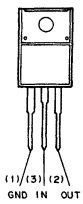
POSITIVE VOLTAGE REGULATOR
—FRONT VIEW—

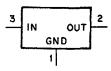




TA79009S (TOSHIBA)

NEGATIVE VOLTAGE REGULATOR (500mA)

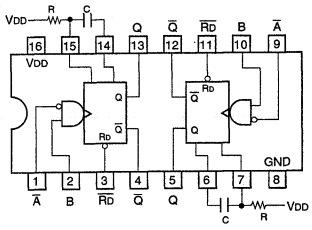




TC74HC123AF (TOSHIBA)FLAT PACKAGE
TC74HC123AF-TP2

C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS

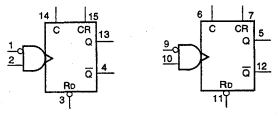
-TOP VIEW-



INPUTS			OUTPUTS	
R̄D	A	B	Q	Q̄
0	X	X	0	1
1	1	X	0	1
1	X	0	0	1
1	0	↑	⊓	⊓
1	↓	1	⊓	⊓
↓	0	1	⊓	⊓

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

OUTPUT PULSE WIDTH = 0.46 CR



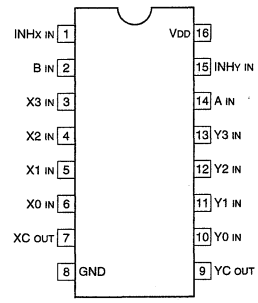
NOTE :

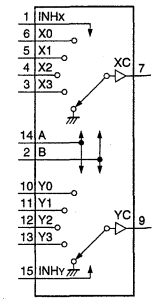
TYPE	VDD
TC74HC123AF	+5V
TC74VHC	+2V to +5.5V
OTHER TYPES	+2V to +6V

TC74VHC153F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS DUAL 4-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER

-TOP VIEW-





NOTE:

TYPE	VDD
ACT/HCT/FCT	+5V
40H	+2 to +8V
TC74AC/TC74VHC	+2 to +5.5V
OTHER TYPES	+2 to +6V

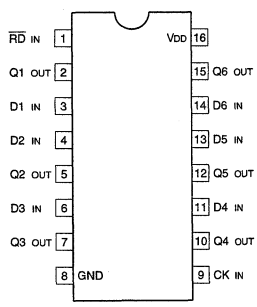
CONTROL IN			ON
INH	B	A	CHANNEL
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	GND

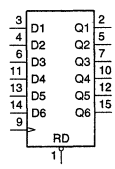
0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

TC74VHC174F (TOSHIBA)FLAT PACKAGE
TC74VHC174F(EL)

C-MOS D-TYPE FLIP-FLOP WITH RESET

- TOP VIEW -





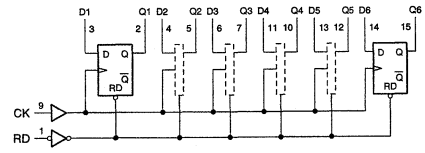
EACH FLIP-FLOP

INPUTS			OUT
RD	CK	D	Q
0	X	X	0
1	↑	0	0
1	↑	1	1
1	0	X	Q0

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

NOTE :

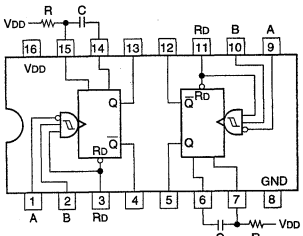
TYPE	VDD
ACT/HCT	+5V
TC74AC/TC74VHC	+2 to +5.5V
OTHER TYPES	+2 to +6V



TC74HC221AF (TOSHIBA)FLAT PACKAGE
TC74HC221AF-TP2

C-MOS MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT

-TOP VIEW-



INPUTS			OUTPUTS	
R̄D	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊓
1	↓	1	⊓	⊓
↑	0	1	⊓	⊓

0 ; LOW LEVEL
1 ; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

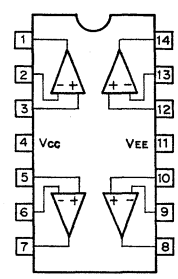
NOTE:

TYPE	VDD
74AC/74VHC	+2 to +5.5V
74HCT	+4.5 to +5.5V
74HC	+2 to +6V

UPC4574G2 (NEC)
UPC4574G2-T2

QUAD OPERATIONAL AMPLIFIER

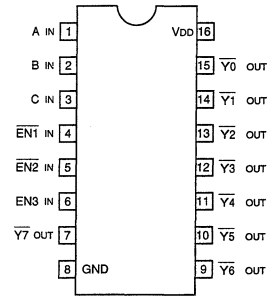
– TOP VIEW –

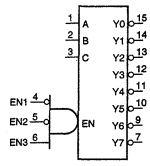


Vcc – VEE ≦ 36V

TC74VHCT138F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS 3-TO-8 LINE DECODER / DEMULTIPLEXER
—TOP VIEW—





NOTE:

TYPE	VDD
74HCT138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE TC74VHC138	+2 to +5.5V
OTHER TYPES	+2 to +6V

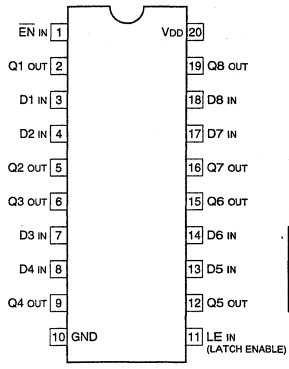
INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

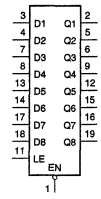
EN = $\overline{EN1} \cdot \overline{EN2} \cdot EN3$

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC74VHCT373F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS 3-STATE OUTPUT OCTAL LATCHES
-TOP VIEW-



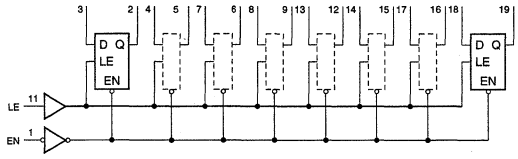


INPUTS			OUT
EN	D	LE	Q
0	1	1	1
0	0	1	0
0	X	0	Qo
1	X	X	HI-Z

HI-Z ; HIGH IMPEDANCE
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

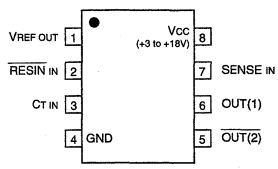
NOTE;

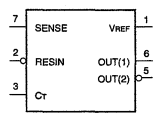
TYPE	VDD
AC HC	+2 to +6V
ACT HCT	+5V

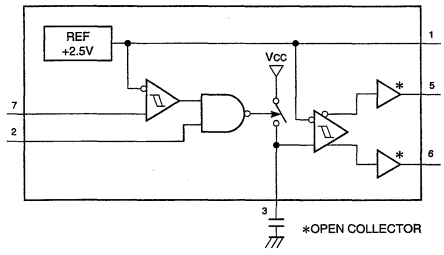


TL7705CPS-B (TI)FLAT PACKAGE
TL7705CPS-B-E05

POWER VOLTAGE SUPERVISOR
—TOP VIEW—

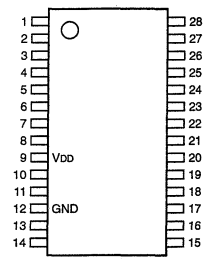


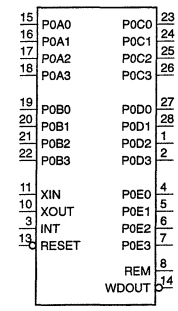




UPD17216GT-560 (NEC)FLAT PACKAGE

C-MOS 4 BIT SINGLE CHIP MICRO CONTROLLER
–TOP VIEW–

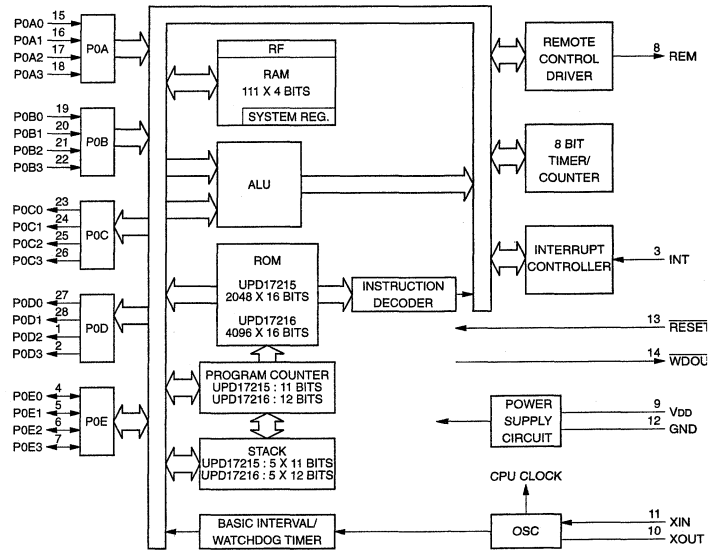




VDD : +2.2 to 5.5V (HIGH SPEED MODE)
+2.0 to 5.5V (NORMAL MODE)

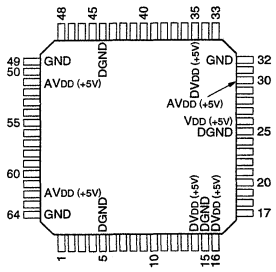
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	P0D2	15	I	P0A0
2	O	P0D3	16	I	P0A1
3	I	INT	17	I	P0A2
4	I/O	P0E0	18	I	P0A3
5	I/O	P0E1	19	I	P0B0
6	I/O	P0E2	20	I	P0B1
7	I/O	P0E3	21	I	P0B2
8	O	REM	22	I	P0B3
9	—	VDD	23	O	P0C0
10	O	XOUT	24	O	P0C1
11	I	XIN	25	O	P0C2
12	—	GND	26	O	P0C3
13	I	$\overline{RESET}$	27	O	P0D0
14	O	$\overline{WDOUT}$	28	O	P0D1

INT ; EXTERNAL INTERRUPT INPUT
P0A0–P0A3 ; INPUT PORTS
P0B0–P0B3
P0C0–P0C3 ; OUTPUT PORTS
P0D0–P0D3
P0E0–P0E3 ; INPUT/OUTPUT PORTS
REM ; REMOTE CONTROLLER DRIVE OUTPUT
RESET ; SYSTEM RESET INPUT
WDOUT ; HAZARD/LOW VDD
XIN, XOUT ; OSC



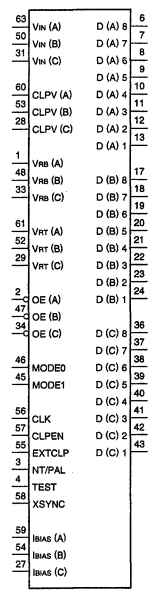
TLC5733AIPM (TI)

C-MOS 8-BIT 3CHANNEL SEMI-FLASH A/D CONVERTER
-TOP VIEW-



(DVDD, AVDD = +5 V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	VRB (A)	14	—	DVDD (QA)	27	—	IBIAS (C)	40	O	D (C) 4	53	I	CLPV (B)
2	I	$\overline{OE}$ (A)	15	—	DGND (QB)	28	I	CLPV (C)	41	O	D (C) 3	54	—	IBIAS (B)
3	I	NT/PAL	16	—	DVDD (QB)	29	I	VRT (C)	42	O	D (C) 2	55	I	EXTCLP
4	I	TEST	17	O	D (B) 8	30	—	AVDD (C)	43	O	D (C) 1	56	I	CLK
5	—	DGND (QA)	18	O	D (B) 7	31	I	VIN (C)	44	—	DGND (QC)	57	I	CLPEN
6	O	D (A) 8	19	O	D (B) 6	32	—	GND (C)	45	I	MODE1	58	I	XSYNC
7	O	D (A) 7	20	O	D (B) 5	33	I	VRB (C)	46	I	MODE0	59	—	IBIAS (A)
8	O	D (A) 6	21	O	D (B) 4	34	I	$\overline{OE}$ (C)	47	I	$\overline{OE}$ (B)	60	I	CLPV (A)
9	O	D (A) 5	22	O	D (B) 3	35	—	DVDD (QC)	48	I	VRB (B)	61	I	VRT (A)
10	O	D (A) 4	23	O	D (B) 2	36	O	D (C) 8	49	—	GND (B)	62	—	AVDD (A)
11	O	D (A) 3	24	O	D (B) 1	37	O	D (C) 7	50	I	VIN (B)	63	I	VIN (A)
12	O	D (A) 2	25	—	DGND	38	O	D (C) 6	51	—	AVDD (B)	64	—	GND (A)
13	O	D (A) 1	26	—	DVDD	39	O	D (C) 5	52	I	VRT (B)			



INPUT

CLK	; CLOCK
CLPEN	; CLAMP ENABLE FOR INTERNAL CLAMP CIRCUIT
CLPV (A) - CLPV (C)	; CLAMPING LEVEL OF ADC
EXTCLP	; EXTERNAL CLAMP PULSE
MODE0, MODE1	; OUTPUT FORMAT MODE SELECT
NT/PAL	; NTSC/PAL CONTROL (NTSC = 0, PAL = 1)
$\overline{OE}$ (A) - $\overline{OE}$ (C)	; OUTPUT ENABLE OF DATA
TEST	; TEST = 1, DEVICE = 0
VIN (A) - VIN (C)	; ANALOG INPUT OF ADC
VRB (A) - VRB (C)	; REFERENCE VOLTAGE BOTTOM OF ADC
VRT (A) - VRT (C)	; REFERENCE VOLTAGE TOP OF ADC
XSYNC	; OUTPUT SYNCHRONOUS

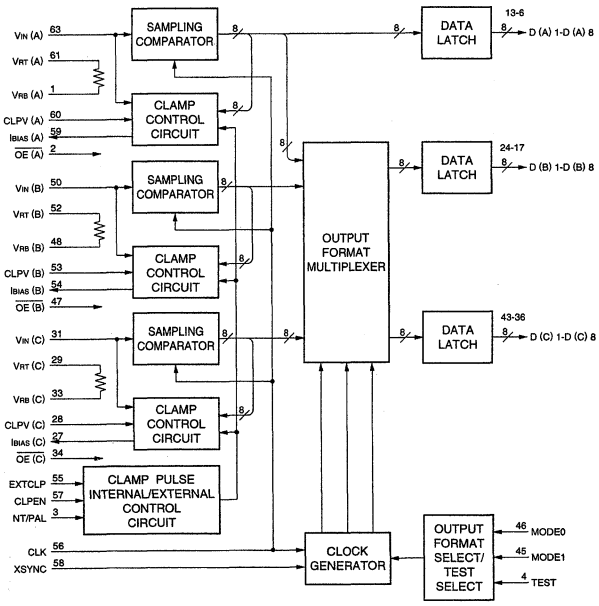
OUTPUT

D (A) 1 - D (A) 8	; DATA OUTPUT OF ADC A
D (B) 1 - D (B) 8	; DATA OUTPUT OF ADC B
D (C) 1 - D (C) 8	; DATA OUTPUT OF ADC C

OTHER

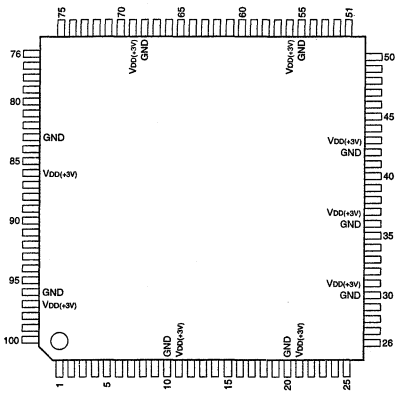
DGND	; DIGITAL GROUND
DGND (QA) - DGND (QC)	; DIGITAL GROUND FOR OUTPUT OF ADC
GND (A) - GND (C)	; GROUND OF ADC
IBIAS (A) - IBIAS (C)	; CLAMPING BIAS CURRENT OF ADC
AVDD (A) - AVDD (C)	; ANALOG VDD OF ADC
DVDD	; DIGITAL VDD
DVDD (QA) - DVDD (QC)	; DIGITAL VDD FOR OUTPUT OF ADC

0 ; LOW LEVEL
1 ; HIGH LEVEL



UPD77017GC-030-9EU (NEC)
UPD77017GC-047-9EU (NEC)

C-MOS 16-BIT DIGITAL SIGNAL PROCESSOR
- TOP VIEW -



(V_{DD} = +3V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	$\overline{RESET}$	21	–	V_{DD}	41	I/O	D4	61	I	SI2	81	I	HA0
2	I	$\overline{INT4}$	22	O	DA3	42	–	GND	62	I/O	P3	82	I	HA1
3	I	$\overline{INT3}$	23	O	DA2	43	–	V_{DD}	63	I/O	P2	83	–	GND
4	I	$\overline{INT2}$	24	O	DA1	44	I/O	D3	64	I/O	P1	84	I	X2
5	I	$\overline{INT1}$	25	O	DA0	45	I/O	D2	65	I/O	P0	85	I	X1
6	I	I.C.	26	I/O	D15	46	I/O	D1	66	O	$\overline{HRE}$	86	–	V_{DD}
7	O	$\overline{X/Y}$	27	I/O	D14	47	I/O	D0	67	O	$\overline{HWE}$	87	O	CLKOUT
8	O	DA13	28	I/O	D13	48	I	SI1	68	–	GND	88	O	TDO
9	O	DA12	29	I/O	D12	49	I	SIEN1	69	–	V_{DD}	89	O	TICE
10	–	GND	30	–	GND	50	I	SCK1	70	I/O	HD7	90	I	TCK
11	–	V_{DD}	31	–	V_{DD}	51	O	SIAK1	71	I/O	HD6	91	I	TDI
12	O	DA11	32	I/O	D11	52	O	SO1	72	I/O	HD5	92	I	TMS
13	O	DA10	33	I/O	D10	53	O	SORQ1	73	I/O	HD4	93	I	$\overline{HOLDRQ}$
14	O	DA9	34	I/O	D9	54	I	SOEN1	74	I/O	HD3	94	O	$\overline{HOLDAK}$
15	O	DA8	35	I/O	D8	55	–	GND	75	I/O	HD2	95	O	$\overline{MWR}$
16	O	DA7	36	–	GND	56	–	V_{DD}	76	I/O	HD1	96	–	GND
17	O	DA6	37	–	V_{DD}	57	I	SOEN2	77	I/O	HD0	97	–	V_{DD}
18	O	DA5	38	I/O	D7	58	O	SO2	78	I	$\overline{HCS}$	98	O	$\overline{MRD}$
19	O	DA4	39	I/O	D6	59	I	SCK2	79	I	$\overline{HRD}$	99	O	$\overline{BSTB}$
20	–	GND	40	I/O	D5	60	I	SIEN2	80	I	$\overline{HWR}$	100	I	$\overline{WAIT}$

INPUT

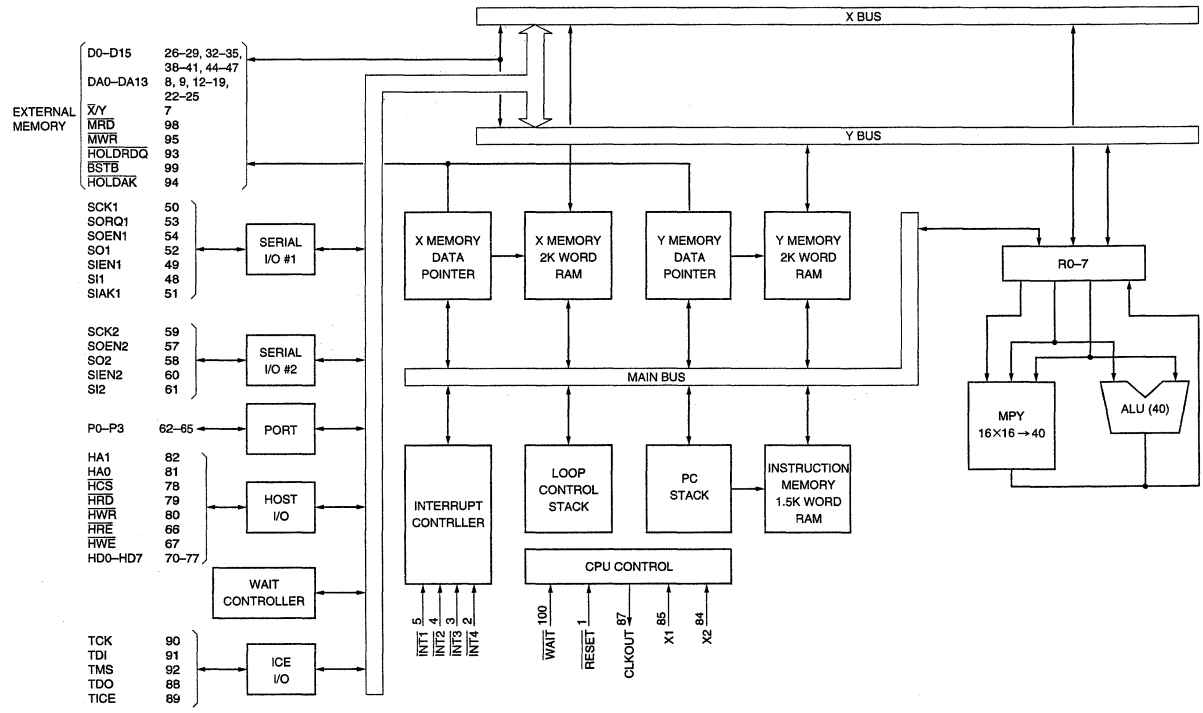
HA0, HA1	; HD7-HD0 ACCESS REGISTERS POINTER
$\overline{HCS}$	; HOST CHIP SELECT
$\overline{HOLDRQ}$	; HOLD REQUEST
$\overline{HRD}$	; HOST READ
$\overline{HWR}$	; HOST WRITE
I. C.	; INTERNAL CONNECTED
$\overline{INT1}$-$\overline{INT4}$	; MASKABLE EXTERNAL INTERRUPT
$\overline{RESET}$	; INTERNAL SYSTEM RESET
SCK1, SCK2	; SERIAL CLOCK
SI1, SI2	; SERIAL DATA
SIEN1, SIEN2	; SERIAL INPUT ENABLE
SOEN1, SOEN2	; SERIAL OUTPUT ENABLE
TCK	; TEST CLOCK
TDI	; TEST DATA
TMS	; TEST MODE SELECT
$\overline{WAIT}$	; WAIT (0 : WAIT, 1 : NOT WAIT)
X1, X2	; OSCILLATOR/CLOCK

OUTPUT

$\overline{BSTB}$	; BUS STROBE
CLKOUT	; INTERNAL SYSTEM CLOCK
DA0-DA13	; EXTERNAL DATA/ MEMORY ADDRESS BUS
$\overline{HOLDAK}$	; HOLD ACKNOWLEDGE
$\overline{HRE}$	; HOST READ ENABLE
$\overline{HWE}$	; HOST WRITE ENABLE
$\overline{MRD}$	; EXTERNAL MEMORY READ
MWR	; EXTERNAL MEMORY WRITE
SIAK1	; SERIAL INPUT ACKNOWREDGE
SO1, SO2	; SERIAL DATA
SORQ1,	; SERIAL OUTPUT REQUEST
TDO	; TEST DATA
TICE	; TEST IN-CIRCUIT EMULATOR
$\overline{X/Y}$	; MEMORY SELECT

INPUT/OUTPUT

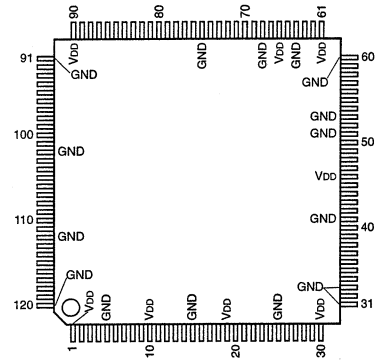
D0-D15	; 16-BIT DATA BUS
HD0-HD7	; 8-BIT HOST DATA BUS
P0-P3	; INPUT/OUTPUT PORT

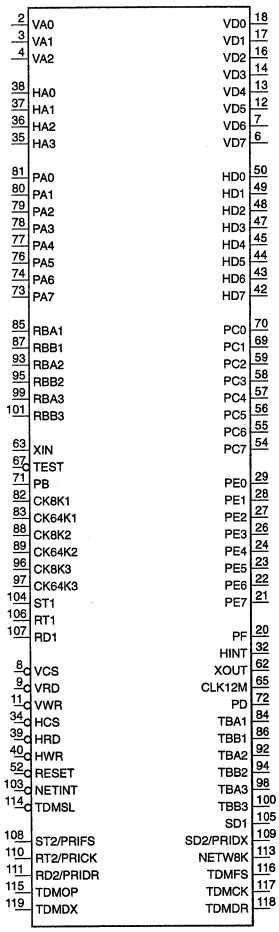


UPD65646GJ-171-3EB (NEC)FLAT PACKAGE

NETW-VCP INTERFACE

–TOP VIEW–





PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	—	VDD	31	—	GND	61	—	VDD	91	—	GND
2	I	VA0	32	O	HINT	62	O	XOUT	92	O	TBA2
3	I	VA1	33	—	GND	63	I	XIN	93	I	RBA2
4	I	VA2	34	I	$\overline{HCS}$	64	—	GND	94	O	TBB2
5	—	GND	35	I	HA3	65	O	CLK12M	95	I	RBB2
6	I/O	VD7	36	I	HA2	66	—	VDD	96	I	CK8K3
7	I/O	VD6	37	I	HA1	67	I	$\overline{TEST}$	97	I	CK64K3
8	I	$\overline{VCS}$	38	I	HA0	68	—	GND	98	O	TBA3
9	I	$\overline{VRD}$	39	I	$\overline{HRD}$	69	O	PC1	99	I	RBA3
10	—	VDD	40	I	$\overline{HWR}$	70	O	PC0	100	O	TBB3
11	I	$\overline{VWR}$	41	—	GND	71	I	PB	101	I	RBB3
12	I/O	VD5	42	I/O	HD7	72	O	PD	102	—	GND
13	I/O	VD4	43	I/O	HD6	73	I	PA7	103	I	$\overline{NETINT}$
14	I/O	VD3	44	I/O	HD5	74	I	PA6	104	I	ST1
15	—	GND	45	I/O	HD4	75	—	GND	105	O	SD1
16	I/O	VD2	46	—	VDD	76	I	PA5	106	I	RT1
17	I/O	VD1	47	I/O	HD3	77	I	PA4	107	I	RD1
18	I/O	VD0	48	I/O	HD2	78	I	PA3	108	I	ST2/PRIFS
19	—	VDD	49	I/O	HD1	79	I	PA2	109	O	SD2/PRIDX
20	O	PF	50	I/O	HD0	80	I	PA1	110	I	RT2/PRICK
21	O	PE7	51	—	GND	81	I	PA0	111	I	RD2/PRIDR
22	O	PE6	52	I	$\overline{RESET}$	82	I	CK8K1	112	—	GND
23	O	PE5	53	—	GND	83	I	CK64K1	113	O	NETW8K
24	O	PE4	54	O	PC7	84	O	TBA1	114	I	$\overline{TDMSL}$
25	—	GND	55	O	PC6	85	I	RBA1	115	I	TDMOP
26	O	PE3	56	O	PC5	86	O	TBB1	116	O	TDMFS
27	O	PE2	57	O	PC4	87	I	RBB1	117	O	TDMCK
28	O	PE1	58	O	PC3	88	I	CK8K2	118	O	TDMDR
29	O	PE0	59	O	PC2	89	I	CK64K2	119	I	TDMDX
30	—	VDD	60	—	GND	90	—	VDD	120	—	GND

INPUT

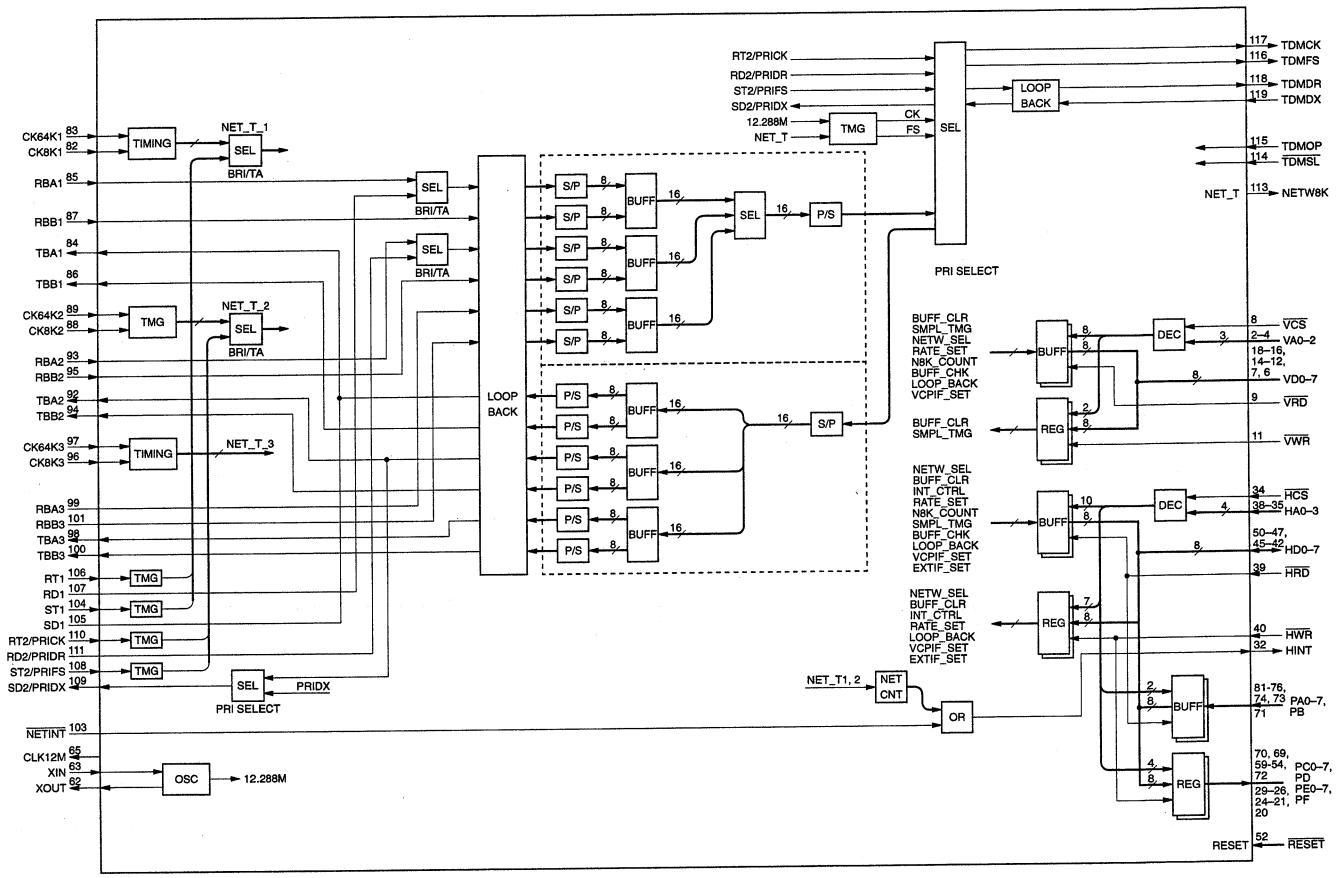
CK64K1–3	; EACH 64kHz CLOCK FOR ISDN BRI
CK8K1–3	; EACH 8kHz (OCTET TIMING) CLOCK FOR ISDN BRI
HA0–3	; ADDRESS FROM THE HOST CPU
$\overline{HCS}$	; CHIP SELECT FROM THE HOST CPU
$\overline{HRD}$	; READ ENABLE FROM THE HOST CPU
$\overline{HWR}$	; WRITE PULSE FROM THE HOST CPU
$\overline{NETINT}$	; INTERRUPT
PA0–7, PB	; INPUT PORTS
RBA1–3, RBB1–3	; EACH RECEIVING DATA FOR ISDN BRI
RD1	; RECEIVING DATA FOR EXCLUSIVE USE LINE (TA) I/F
RD2/PRIDR	; RECEIVING DATA FOR EXCLUSIVE USE LINE (TA) I/F
$\overline{RESET}$	; RESET
RT1	; RECEIVING TIMING FOR EXCLUSIVE USE LINE (TA) I/F
RT2/PRICK	; RECEIVING TIMING FOR EXCLUSIVE USE LINE (TA) I/F
ST1	; TRANSMITTING TIMING FOR EXCLUSIVE USE LINE (TA) I/F
ST2/PRIFS	; TRANSMITTING TIMING FOR EXCLUSIVE USE LINE (TA) I/F
TDMDX	; SERIAL DATA FOR TDM BUS
$\overline{TEST}$	; TEST MODE SETTING TERMINAL
TDMOP	; SERIAL DATA FROM THE SECOND VCP
$\overline{TDMSL}$	; IN PRI MODE, DURING THIS TERMINAL IS ACTIVE, TREATS DATA FROM TDMDR AS INPUT SIGNAL FROM TDMOP
VA0–2	; ADDRESS FROM VCP
$\overline{VCS}$	; CHIP SELECT FROM VCP
$\overline{VRD}$	; READ ENABLE FROM VCP
$\overline{VWR}$	; WRITE PULSE FROM VCP
XIN	; CRYSTAL OSCILLATOR (12.288MHz)

OUTPUT

CLK12M	; 12.288MHz CLOCK
HINT	; INTERRUPT TO THE HOST CPU
NETW8K	; 8kHz PULSE SIGNAL DIVIDE CIRCUIT CLOCK
PC0–7, PD, PE0–7, PF	; OUTPUT PORTS
SD1	; TRANSMITTING DATA FOR EXCLUSIVE USE LINE (TA) I/F
SD2/PRIDX	; TRANSMITTING DATA FOR EXCLUSIVE USE LINE (TA) I/F
TBA1–3, TBB1–3	; EACH TRANSMITTING DATA FOR ISDN BRI
TDMCK	; CLOCK (3.072MHz) FOR TDM BUS
TDMDR	; SERIAL DATA FOR TDM BUS
TDMFS	; FRAME SYNC (8kHz) FOR TDM BUS
XOUT	; CRYSTAL OSCILLATOR (12.288MHz)

INPUT/OUTPUT

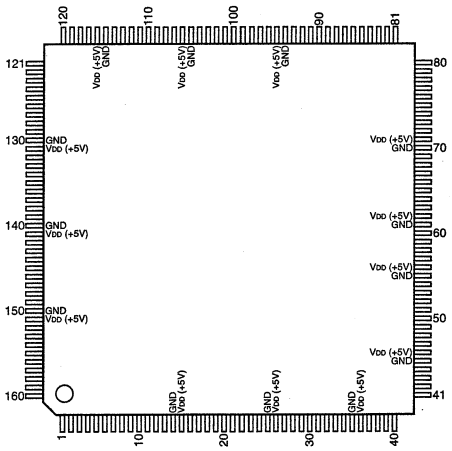
HD0–7	; DATA BUS FROM THE HOST CPU
VD0–7	; DATA BUS FROM VCP


CK64K1 83
CK8K1 82
TIMING
NET_T_1
SEL
BRI/TA
RBA1 85
RBB1 87
TBA1 84
TBB1 86
CK64K2 89
CK8K2 88
TMG
NET_T_2
RBA2 93
RBB2 95
TBA2 92
TBB2 94
CK64K3 97
CK8K3 96
NET_T_3
RBA3 99
RBB3 101
TBA3 98
TBB3 100
RT1 106
RD1 107
ST1 104
SD1 105
RT2/PRICK 110
RD2/PRIDR 111
ST2/PRIFS 108
SD2/PRIDX 109
PRIDX
PRI SELECT
NETINT 103
CLK12M 65
XIN 63
XOUT 62
OSC
12.288M
LOOP BACK
S/P
P/S
BUFF
16
8
RT2/PRICK
RD2/PRIDR
ST2/PRIFS
SD2/PRIDX
12.288M
NET_T
CK
FS
PRI SELECT
LOOP BACK
117 TDMCK
116 TDMFS
118 TDMDR
119 TDMDX
115 TDMOP
114 TDMSL
113 NETW8K
BUFF_CLR
SMPL_TMG
NETW_SEL
RATE_SET
N8K_COUNT
BUFF_CHK
LOOP_BACK
VCPIF_SET
EXTIF_SET
DEC
8 VCS
2–4 VA0–2
18–16, 14–12, 7, 6 VD0–7
9 VRD
11 VWR
34 HCS
38–35 HA0–3
50–47, 45–42 HD0–7
39 HRD
40 HWR
32 HINT
NET_T1, 2
NET CNT
OR
81-76, 74, 73 71 PA0–7, PB
70, 69, 59-54, 72 PC0–7, PD
29–26, 24–21, 20 PE0–7, PF
RESET
52 RESET

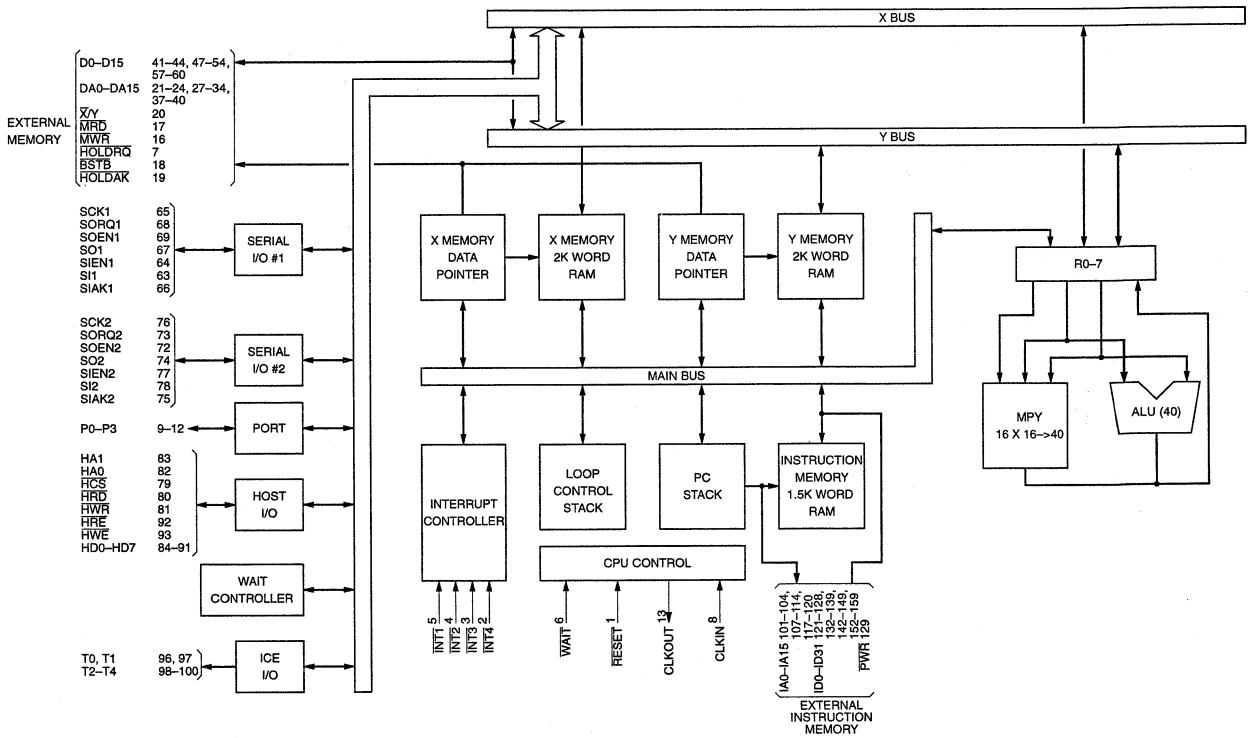
UPD77016GM-KMD (NEC)

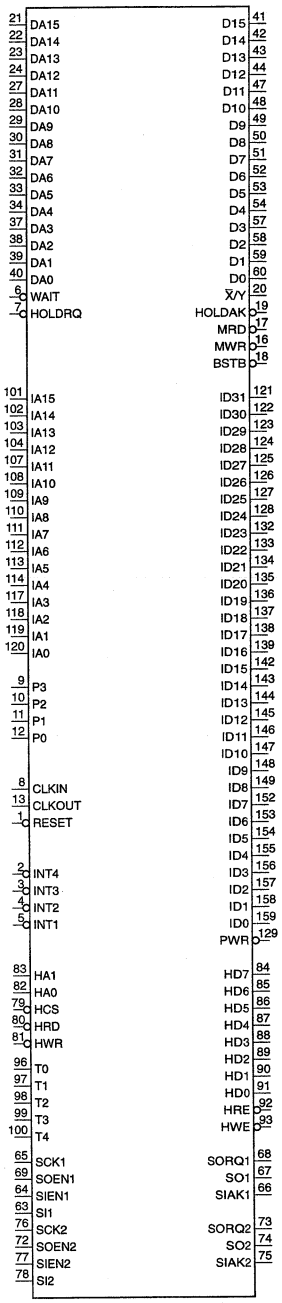
C-MOS 16 BIT DIGITAL SIGNAL PROCESSOR

–TOP VIEW–



PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	$\overline{\text{RESET}}$	41	I/O	D15	81	I	$\overline{\text{HWR}}$	121	I/O	ID31
2	I	$\overline{\text{INT4}}$	42	I/O	D14	82	I	HA0	122	I/O	ID30
3	I	$\overline{\text{INT3}}$	43	I/O	D13	83	I	HA1	123	I/O	ID29
4	I	$\overline{\text{INT2}}$	44	I/O	D12	84	I/O	HD7	124	I/O	ID28
5	I	$\overline{\text{INT1}}$	45	—	GND	85	I/O	HD6	125	I/O	ID27
6	I	$\overline{\text{WAIT}}$	46	—	VDD	86	I/O	HD5	126	I/O	ID26
7	I	$\overline{\text{HOLDRQ}}$	47	I/O	D11	87	I/O	HD4	127	I/O	ID25
8	I	CLKIN	48	I/O	D10	88	I/O	HD3	128	I/O	ID24
9	I/O	P3	49	I/O	D9	89	I/O	HD2	129	O	$\overline{\text{PWR}}$
10	I/O	P2	50	I/O	D8	90	I/O	HD1	130	—	GND
11	I/O	P1	51	I/O	D7	91	I/O	HD0	131	—	VDD
12	I/O	P0	52	I/O	D6	92	O	$\overline{\text{HRE}}$	132	I/O	ID23
13	O	CLKOUT	53	I/O	D5	93	O	$\overline{\text{HWE}}$	133	I/O	ID22
14	—	GND	54	I/O	D4	94	—	GND	134	I/O	ID21
15	—	VDD	55	—	GND	95	—	VDD	135	I/O	ID20
16	O	$\overline{\text{MWR}}$	56	—	VDD	96	O	T0	136	I/O	ID19
17	O	$\overline{\text{MRD}}$	57	I/O	D3	97	O	T1	137	I/O	ID18
18	O	$\overline{\text{BSTB}}$	58	I/O	D2	98	I	T2	138	I/O	ID17
19	O	$\overline{\text{HOLDAK}}$	59	I/O	D1	99	I	T3	139	I/O	ID16
20	O	$\overline{\text{X}}$/Y	60	I/O	D0	100	I	T4	140	—	GND
21	O	DA15	61	—	GND	101	O	IA15	141	—	VDD
22	O	DA14	62	—	VDD	102	O	IA14	142	I/O	ID15
23	O	DA13	63	I	SI1	103	O	IA13	143	I/O	ID14
24	O	DA12	64	I	SIEN1	104	O	IA12	144	I/O	ID13
25	—	GND	65	I	SCK1	105	—	GND	145	I/O	ID12
26	—	VDD	66	O	SIAK1	106	—	VDD	146	I/O	ID11
27	O	DA11	67	O	SO1	107	O	IA11	147	I/O	ID10
28	O	DA10	68	O	SORQ1	108	O	IA10	148	I/O	ID9
29	O	DA9	69	I	SOEN1	109	O	IA9	149	I/O	ID8
30	O	DA8	70	—	GND	110	O	IA8	150	—	GND
31	O	DA7	71	—	VDD	111	O	IA7	151	—	VDD
32	O	DA6	72	I	SOEN2	112	O	IA6	152	I/O	ID7
33	O	DA5	73	O	SORQ2	113	O	IA5	153	I/O	ID6
34	O	DA4	74	O	SO2	114	O	IA4	154	I/O	ID5
35	—	GND	75	O	SIAK2	115	—	GND	155	I/O	ID4
36	—	VDD	76	I	SCK2	116	—	VDD	156	I/O	ID3
37	O	DA3	77	I	SIEN2	117	O	IA3	157	I/O	ID2
38	O	DA2	78	I	SI2	118	O	IA2	158	I/O	ID1
39	O	DA1	79	I	$\overline{\text{HCS}}$	119	O	IA1	159	I/O	ID0
40	O	DA0	80	I	$\overline{\text{HRD}}$	120	O	IA0	160	—	NC





INPUT

CLKIN	; SYSTEM CLOCK
HA0, HA1	; HD7–HD0 ACCESS REGISTERS POINTER
$\overline{HCS}$	; HOST CHIP SELECT
$\overline{HOLDRQ}$	; HOLD REQUEST
$\overline{HRD}$	; HOST READ
$\overline{HWR}$	; HOST WRITE
$\overline{INT1}$-$\overline{INT4}$	; MASKABLE EXTERNAL INTERRUPT
$\overline{RESET}$	; INTERNAL SYSTEM RESET
SCK1, SCK2	; SERIAL CLOCK
SI1, SI2	; SERIAL DATA
SIEN1, SIEN2	; SERIAL INPUT ENABLE
SOEN1, SOEN2	; SERIAL OUTPUT ENABLE
T2-T4	; DEBUG
$\overline{WAIT}$	; WAIT (0 : WAIT, 1 : NOT WAIT)

OUTPUT

$\overline{BSTB}$	; BUS STROBE
CLKOUT	; INTERNAL SYSTEM CLOCK
DA0-DA15	; EXTERNAL DATA / MEMORY ADDRESS BUS
$\overline{HOLDAK}$	; HOLD ACKNOWLEDGE
$\overline{HRE}$	; HOST READ ENABLE
$\overline{HWE}$	; HOST WRITE ENABLE
IA0-IA15	; EXTERNAL INSTRUCTION ADDRESS BUS
$\overline{MRD}$	; EXTERNAL MEMORY READ
$\overline{MWR}$	; EXTERNAL MEMORY WRITE
$\overline{PWR}$	; PROGRAM MEMORY WRITE STROBE
SIAK1, SIAK2	; SERIAL INPUT ACKNOWREDGE
SO1, SO2	; SERIAL DATA
SORQ1, SORQ2	; SERIAL OUTPUT REQUEST
T0,T1	; DEBUG
X/Y	; MEMORY SELECT

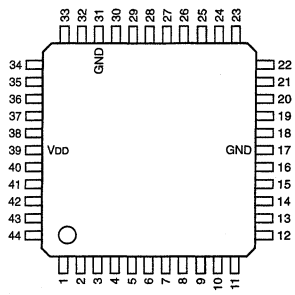
INPUT/OUTPUT

D0–D15	; 16 BIT DATA BUS
HD0-HD7	; 8 BIT HOST DATA BUS
ID0-ID31	; 32 BIT INSTRUCTION
P0-P3	; INPUT/OUTPUT PORT

UPD65016GB-041-3B4 (NEC)

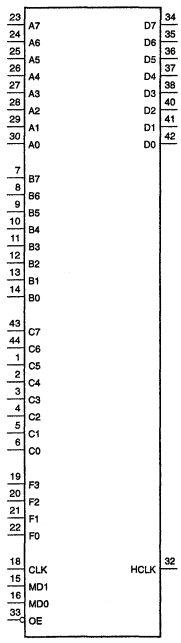
C-MOS MULTI FUNCTION GATE

–TOP VIEW–



(VDD = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	C5	12	I	B2	23	I	A7	34	O	D7
2	I	C4	13	I	B1	24	I	A6	35	O	D6
3	I	C3	14	I	B0	25	I	A5	36	O	D5
4	I	C2	15	I	MD1	26	I	A4	37	O	D4
5	I	C1	16	I	MD0	27	I	A3	38	O	D3
6	I	C0	17	—	GND	28	I	A2	39	—	VDD
7	I	B7	18	I	CLK	29	I	A1	40	O	D2
8	I	B6	19	I	F3	30	I	A0	41	O	D1
9	I	B5	20	I	F2	31	—	GND	42	O	D0
10	I	B4	21	I	F1	32	O	HCLK	43	I	C7
11	I	B3	22	I	F0	33	I	OE	44	I	C6



MD1	MD0	MODE	
L	L	VARIABLE LENGTH SHIFT REGISTER	••••• MODE-0
L	H	SORTING REGISTER	••••• MODE-1
H	L	TIMING GENERATOR	••••• MODE-2
H	H	3 to 1 MULTIPLEXER WITH D-FF	••••• MODE-3

LOW LEVEL : GND
HIGH LEVEL: +5V

MODE-0

INPUT
A0–A7 : SHIFT REGISTER
F0–F3 : DELAY CONTROL

MODE-1

INPUT
A0–A7 : LOWER 8 BITS
B0–B7 : UPPER 8 BITS
F0 : SYNC
F1 : GRAPH/MOTION SELECT
F2 : INVERT 2SB–LSB (D6–D0) WHEN H
F3 : INVERT MSB (D7) WHEN H

MODE-2

INPUT
A0–A7 : INTERVAL ROM DATA
F0 : COUNTER ENABLE
F1 : LOAD

OUTPUT
HCLK : HALF CLOCK OUTPUT

MODE-3

INPUT
A0–A7 : GROUP A
B0–B7 : GROUP B
C0–C7 : GROUP C
F0, F1 : SELECT FOR GROUP A TO C
F2 : INVERT 2SB to LSB (D6 to D0) WHEN H
F3 : INVERT MSB (D7) WHEN H

ALL MODE

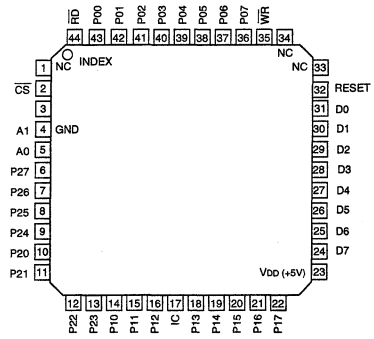
INPUT
CLK : SYSTEM CLOCK
MD0,MD1 : MODE CONTROL
OE : OUTPUT ENABLE

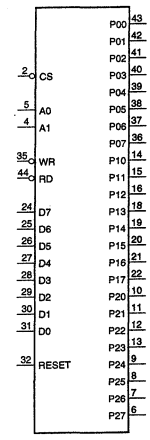
OUTPUT
D0–D7 : DATA

UPD71055GB-10-3B4 (NEC)FLAT PACKAGE

C-MOS PARALLEL INTERFACE UNIT

—TOP VIEW—



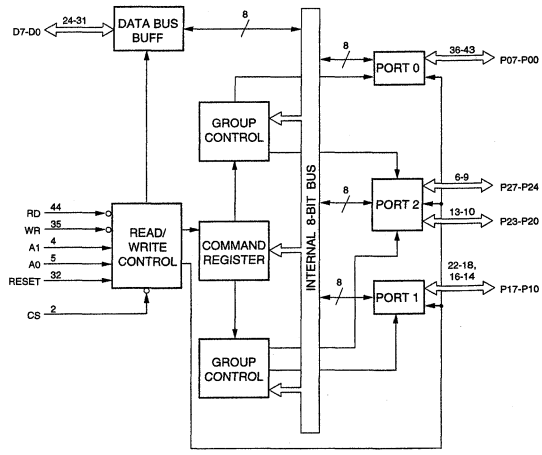


A1, A0 ; ADDRESS
$\overline{CS}$; CHIP SELECT
D7-D0 ; DATA BUS
P07-P00 ; PORT 0
P17-P10 ; PORT 1
P27-P20 ; PORT 2
$\overline{RD}$; READ STROBE
$\overline{WR}$; WRITE STROBE

IC ; INTERNALLY CONNECTED

CS	RD	WR	A1	A0	OPERATION	CPU ACTION
0	0	1	0	0	PORT0→DATA•BUS	INPUT
0	0	1	0	1	PORT1→DATA•BUS	INPUT
0	0	1	1	0	PORT2→DATA•BUS	INPUT
0	0	1	1	1	DISABLE	
0	0	0	X	X		
0	1	0	0	0	DATA•BUS→PORT0	OUTPUT
0	1	0	0	1	DATA•BUS→PORT1	OUTPUT
0	1	0	1	0	DATA•BUS→PORT2	OUTPUT
0	1	0	1	1	DATA•BUS→COMMAND REGISTER	OUTPUT
0	1	1	X	X	HIGH IMPEDANCE	
1	X	X	X	X		

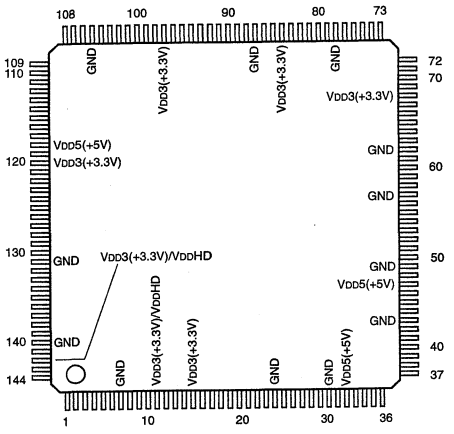
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



WD7625LVSS (WDL)

C-MOS ADDRESS,DATA,HARD DISK BUFFERS
AND POWER MANAGEMENT DEVICE

-TOP VIEW-



ADDRESS BUFFER FUNCTION, MIXED MODE APPLICATION

INPUT

AEN	; ADDRESS ENABLE
ALE	; ADDRESS LATCH ENABLE
BATLO2	; BATTERY POWER LOW
BATPWR	; BATTERY POWER
DACKEN	; DACK ENABLE
FSAD	; FULL STRENGTH ADDRESS BUFFER CONTROL
LCL REQ	; LOCAL ACCESS REQUEST
LOWPREQ	; LOW POWER REQUEST
LOWPWR	; LOW POWER
MASTER	; MASTER
MINISUS	; MINI SUSPEND
MXCTL0-MXCTL2	; MULTIPLEXER CONTROL 0 - 2
P5VPGD	; POWER TO 5V POWER GOOD
PCUW0, PCUW1	; POWER CONTROL UNIT WRITE STROBE 0, 1
PMCIN4, PMCIN6, PMCIN7	; POWER MANAGEMENT CONTROL INPUTS 4, 6, 7
PROCPGD	; PROCESSOR POWER GOOD
RAD0-PAD7	; RAM ADDRESS BUS
READY	; READY
REFRESH	; REFRESH
RSMBLK	; RESUME REQUEST CIRCUIT BLOCK
RSMSW	; RESUME SWITCH
RSTSW	; RESET SWITCH
SA0	; SYSTEM ADDRESS 0
SUSPBLK	; SUSPEND REQUEST CIRCUIT BLOCK
SUSPSW	; SUSPEND SWITCH
TURBO	; TURBO
WE	; WRITE ENABLE
XSUSPRQ	; EXTERNAL SUSPEND REQUEST
XRSMRQ1-XRSMRQ3	; EXTERNAL RESUME REQUEST 1 - 3

INPUT/OUTPUT

A1-A19, A21-A23	; CPU ADDRESS
BHE	; BUS HIGH ENABLE
CSBASE	; CHIP SELECT BASE
LA17-LA19, LA21-LA23	; EARLY ADDRESS
MS120	; 120 MILLISECOND WATCHDOG TIMER STROBE
SA1-SA16	; SYSTEM ADDRESS
SA2LV	; SYSTEM ADDRESS 2 LOW VOLTAGE
SBHE	; SYSTEM BUS HIGH ENABLE

ADDRESS BUFFER FUNCTION, MIXED MODE APPLICATION

OUTPUT

BLEN	; POWER MANAGEMENT CONTROL REGISTER
CSPORTZ	; CHIP SELECT PORT Z
FIXCS	; EXTERNAL CHIP SELECT
FULLPDN	; POWER MANAGEMENT CONTROL REGISTER
IDEON/	; POWER MANAGEMENT CONTROL REGISTER
LCDEN	; POWER MANAGEMENT CONTROL REGISTER
LCL ACK/	; POWER MANAGEMENT CONTROL REGISTER
PMCINMX	; POWER MANAGEMENT CONTROL INPUT MULTIPLEXED
PMCR4,6,8-15	; POWER MANAGEMENT CONTROL REGISTER
PROCPDN	; POWER MANAGEMENT CONTROL REGISTER
RESET	; RESET DRIVE
RESIN, RESIN	; SYSTEM RESET
RESUME	; RESUME
RSTIDE	; RESET IDE
SA17-19	; SYSTEM ADDRESS
WE0-WE3	; WRITE ENABLE

DATA BUFFER FUNCTION, MIXED MODE APPLICATION

INPUT

CSPORTZ	; CHIP SELECT PORT Z
CSBASE	; CHIP SELECT BASE
DACKEN	; DACK ENABLE
DEN0, 1	; DATA BUS ENABLE
DRQ0-3, 5-7	; DMA REQUESTS
DTR	; DIRECTION CONTROL
FULLPDN	; FULL POWER DOWN
IDEDENH	; IDE HIGH BYTE ENABLE
IDEDENL	; IDE LOW BYTE ENABLE
IDEON	; IDE POWER ON
IOR	; I/O READ
IOW	; I/O WRITE
LOWMEG	; FIRST MEGABYTE
MEMR	; MEMORY READ
MEMW	; MEMORY WRITE
MXCTL0-2	; MULTIPLEXER CONTROL
PROCPDN	; PROCESSOR POWER DOWN
PZ0-3	; REGISTER Z
RESIN	; RESET INPUT
SA0-2	; SYSTEM ADDRESS
SDEN	; SWAP DATA ENABLE
SDTR	; SWAP DIRECTION

INPUT/OUTPUT

D0-15	; DATA BUS
IORLV	; I/O READ LOW VOLTAGE
HD0-6, 8-15	; HARD DISK DATA BUS
PA0-7	; GENERAL PURPOSE PORT A
PB0-7	; GENERAL PURPOSE PORT B
PC0-7	; GENERAL PURPOSE PORT C
PY0	; REGISTER Y0
SD0-15	; SYSTEM DATA BUS
SDLV3	; LOW VOLTAGE SD3

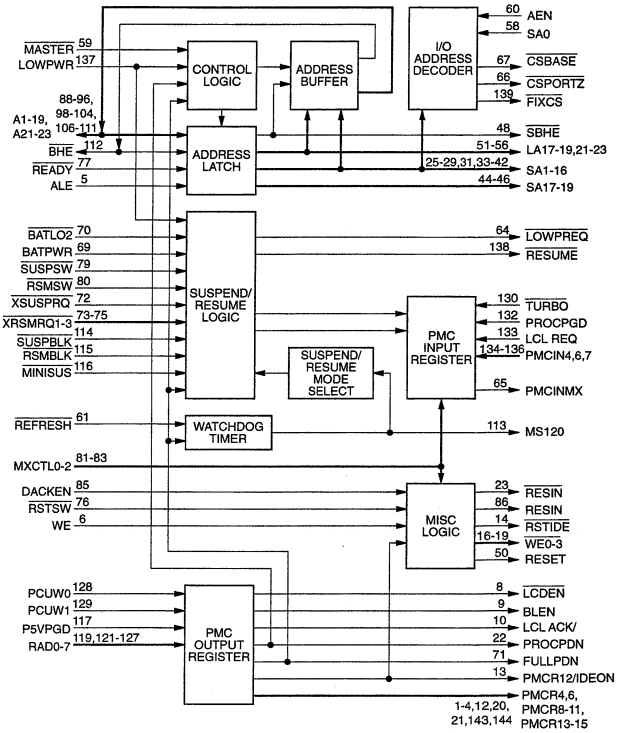
OUTPUT

DACK0-3, 5-7	; DACK
DRQIN	; MULTIPLEXED DRQ
IOWLV	; I/O WRITE LOW VOLTAGE
SDLV2	; LOW VOLTAGE SD2
SMEMR	; SYSTEM MEMORY READ
SMEMW	; SYSTEM MEMORY WRITE

ADDRESS BUFFER FUNCTION, MIXED MODE APPLICATION

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	PMCR8	37	I/O	SA11	73	I	XRSMRQ1	109	I/O	A21
2	O	PMCR10	38	I/O	SA12	74	I	XRSMRQ2	110	I/O	A22
3	O	PMCR11	39	I/O	SA13	75	I	XRSMRQ3	111	I/O	A23
4	O	PMCR14	40	I/O	SA14	76	I	RSTSW	112	I/O	BHE
5	I	ALE	41	I/O	SA15	77	I	READY	113	I/O	MS120
6	I	WE	42	I/O	SA16	78	-	GND	114	I	SUSPBLK
7	-	GND	43	-	GND	79	I	SUSPSW	115	I	RSMBLK
8	O	LCDEN	44	O	SA17	80	I	RSMSW	116	I	MINISUS
9	O	BLEN	45	O	SA18	81	I	MXCTL0	117	I	P5VPGD
10	O	LCL ACK/	46	O	SA19	82	I	MXCTL1	118	-	VDD5
11	-	VDD3	47	-	VDD5	83	I	MXCTL2	119	I	RAD0
12	O	PMCR9	48	I/O	SBHE	84	-	VDD3	120	-	VDD3
13	O	IDEON/PMCR12	49	-	GND	85	I	DACKEN	121	I	RAD1
14	O	RSTIDE	50	O	RESET	86	O	RESIN	122	I	RAD2
15	-	VDD3	51	I/O	LA17	87	-	GND	123	I	RAD3
16	O	WE0	52	I/O	LA18	88	I/O	A1	124	I	RAD4
17	O	WE1	53	I/O	LA19	89	I/O	A2	125	I	RAD5
18	O	WE2	54	I/O	LA21	90	I/O	A3	126	I	RAD6
19	O	WE3	55	I/O	LA22	91	I/O	A4	127	I	RAD7
20	O	PMCR13	56	I/O	LA23	92	I/O	A5	128	I	PCUW0
21	O	PMCR15	57	-	GND	93	I/O	A6	129	I	PCUW1
22	O	PROCPDN	58	I	SA0	94	I/O	A7	130	I	TURBO
23	O	RESIN	59	I	MASTER	95	I/O	A8	131	-	GND
24	-	GND	60	I	AEN	96	I/O	A9	132	I	PROCPGD
25	I/O	SA1	61	I	REFRESH	97	-	VDD3	133	I	LCL REQ
26	I/O	SA2	62	-	GND	98	I/O	A10	134	I	PMCIN4
27	I/O	SA3	63	I/O	SA2LV	99	I/O	A11	135	I	PMCIN6
28	I/O	SA4	64	I	LOWPREQ	100	I/O	A12	136	I	PMCIN7
29	I/O	SA5	65	O	PMCINMX	101	I/O	A13	137	I	LOWPWR
30	-	GND	66	O	CSPORTZ	102	I/O	A14	138	O	RESUME
31	I/O	SA6	67	I/O	CSBASE	103	I/O	A15	139	O	FIXCS
32	-	VDD5	68	-	VDD3	104	I/O	A16	140	-	GND
33	I/O	SA7	69	I	BATPWR	105	-	GND	141	I	FSAD
34	I/O	SA8	70	I	BATLO2	106	I/O	A17	142	-	VDD3
35	I/O	SA9	71	O	FULLPDN	107	I/O	A18	143	O	PMCR4
36	I/O	SA10	72	I	XSUSPRQ	108	I/O	A19	144	O	PMCR6

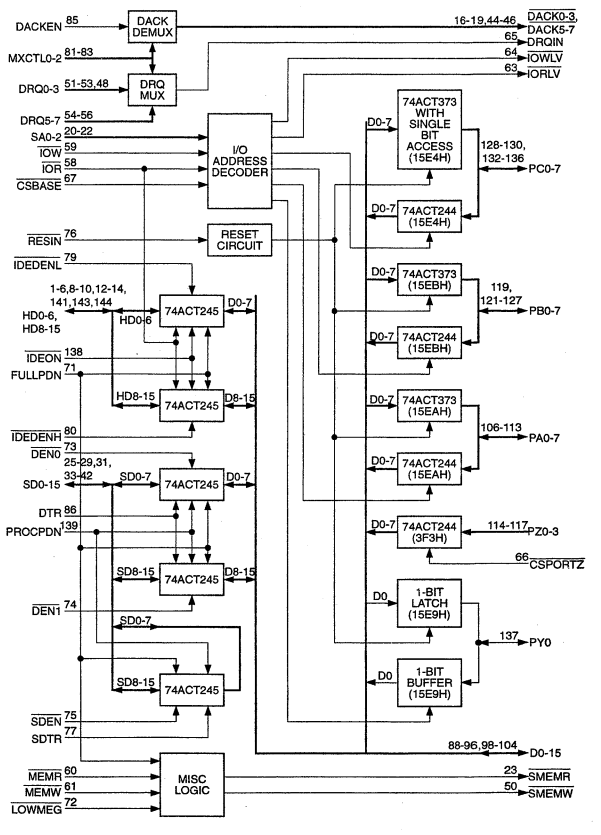
ADDRESS BUFFER FUNCTION, MIXED MODE APPLICATION



DATA BUFFER FUNCTION, MIXED MODE APPLICATION

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I/O	HD3	37	I/O	SD10	73	I	DEN0	109	I/O	PA3
2	I/O	HD4	38	I/O	SD11	74	I	DEN1	110	I/O	PA4
3	I/O	HD5	39	I/O	SD12	75	I	SDEN	111	I/O	PA5
4	I/O	HD6	40	I/O	SD13	76	I	RESIN	112	I/O	PA6
5	I/O	HD8	41	I/O	SD14	77	I	SDTR	113	I/O	PA7
6	I/O	HD9	42	I/O	SD15	78	-	GND	114	I	PZ0
7	-	GND	43	-	GND	79	I	IDEDENL	115	I	PZ1
8	I/O	HD10	44	O	DACK1	80	I	IDEDENH	116	I	PZ2
9	I/O	HD11	45	O	DACK2	81	I	MXCTL0	117	I	PZ3
10	I/O	HD12	46	O	DACK3	82	I	MXCTL1	118	-	VDD5
11	-	VDDHD	47	-	VDD5	83	I	MXCTL2	119	I/O	PB0
12	I/O	HD13	48	I	DRQ3	84	-	VDD3	120	-	VDD3
13	I/O	HD14	49	-	GND	85	I	DACKEN	121	I/O	PB1
14	I/O	HD15	50	O	SMEMW	86	I	DTR	122	I/O	PB2
15	-	VDD5	51	I	DRQ0	87	-	GND	123	I/O	PB3
16	O	DACK0	52	I	DRQ1	88	I/O	D0	124	I/O	PB4
17	O	DACK5	53	I	DRQ2	89	I/O	D1	125	I/O	PB5
18	O	DACK6	54	I	DRQ5	90	I/O	D2	126	I/O	PB6
19	O	DACK7	55	I	DRQ6	91	I/O	D3	127	I/O	PB7
20	I	SA0	56	I	DRQ7	92	I/O	D4	128	I/O	PC0
21	I	SA1	57	-	GND	93	I/O	D5	129	I/O	PC1
22	I	SA2	58	I	IOR	94	I/O	D6	130	I/O	PC2
23	O	SMEMR	59	I	IOW	95	I/O	D7	131	-	GND
24	-	GND	60	I	MEMR	96	I/O	D8	132	I/O	PC3
25	I/O	SD0	61	I	MEMW	97	-	VDD3	133	I/O	PC4
26	I/O	SD1	62	-	GND	98	I/O	D9	134	I/O	PC5
27	I/O	SD2	63	I/O	IORLV	99	I/O	D10	135	I/O	PC6
28	I/O	SD3	64	O	IOWLV	100	I/O	D11	136	I/O	PC7
29	I/O	SD4	65	O	DRQIN	101	I/O	D12	137	I/O	PY0
30	-	GND	66	I	CSPORTZ	102	I/O	D13	138	I	IDEON
31	I/O	SD5	67	I	CSBASE	103	I/O	D14	139	I	PROCPDN
32	-	VDD5	68	-	VDD3	104	I/O	D15	140	-	GND
33	I/O	SD6	69	O	SDLV2	105	-	GND	141	I/O	HD0
34	I/O	SD7	70	I/O	SDLV3	106	I/O	PA0	142	-	VDDHD
35	I/O	SD8	71	I	FULLPDN	107	I/O	PA1	143	I/O	HD1
36	I/O	SD9	72	I	LOWMEG	108	I/O	PA2	144	I/O	HD2

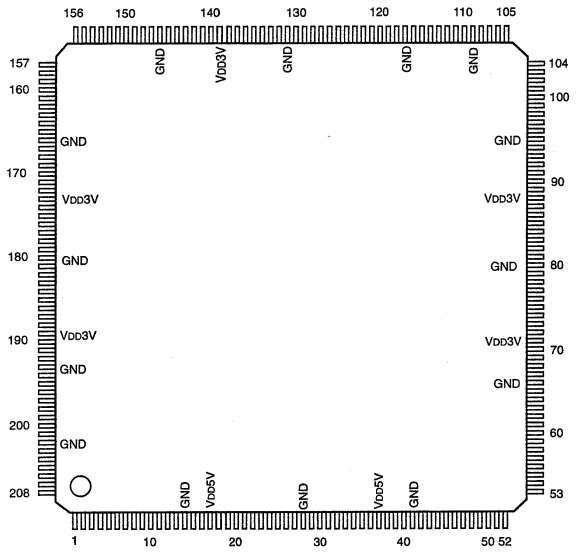
DATA BUFFER FUNCTION, MIXED MODE APPLICATION



WD8110LVZZ25 (WESTERN DIGITAL)

C-MOS SYSTEM CONTROLLER FOR 80486SX/DX

-TOP VIEW-



OUTPUT

A20GATE	; A20 GATE
AEN	; ADDRESS ENABLE
BALE	; AT BUS ADDRESS LATCH ENABLE
BRDY486	; BURST READY 80486
BS16	; BUS SIZE 16
CAS00-03	; COLUMN ADDRESS SELECT 0
CAS10-13	; COLUMN ADDRESS SELECT 1
CPUCLK	; 386/486 CPU CLOCK
CPURES	; CPU RESET
CSEN	; CHIP SELECT ENABLE
DACKEN	; DACK ENABLE
DFS REQ	; DYNAMIC FREQUENCY SHIFT REQUEST FOR IBM BL CPU (NOT IN WEITEK MODE)
DRMWR	; DRAM WRITE
EADS	; EXTERNAL ADDRESS VALID
EXBUSY	; EXTENDED COPROCESSOR BUSY (EXTERNAL COPROCESSOR MODE)
FLUSH	; FLUSH CACHE
GPREGRD	; GENERAL PURPOSE REGISTER IO READ (NOT IN EXTERNAL COPROCESSOR MODE)
GPREGWR	; GENERAL PURPOSE REGISTER IO WRITE
HOLDR	; HOLD REQUEST
INTRQ	; INTERRUPT REQUEST
KEN	; CACHE ENABLE
LBCLK	; LOCAL BUS CLOCK
LOWMEG	; FIRST MEGABYTE (IN WEITEK MODE)
MDEN	; MEMORY DATA ENABLE
MDIR	; MEMORY DIRECTION
MXCTL0-2	; MULTIPLEXER CONTROL
NMI	; NON-MASKABLE INTERRUPT
NPRST	; NUMERIC PROCESSRO RESET
RA9-11,3A,3B/CS0-4	; DRAM ADDRESS BITS/ CHIP SELECT BITS
RAS0-4	; ROW ADDRESS SELECT
RDY486	; READY 80486
ROMBA16-18	; ROM BANK SWITCH
SMEMR	; S MEMORY READ (NOT IN WEITEK MODE)
SMEMW	; S MEMORY WRITE (NOT IN WEITEK MODE)
SMIRDY	; SYSTEM MANAGEMENT INTERRUPT READY
SPKR	; SPEAKER
STP REQ	; STOP CLOCK REQUEST FOR INTEL CPUS (NOT IN WEITEK MODE)
SUSP	; SUSPEND FOR CYRIX CPUS (NOT IN WEITEK MODE)
SXLOWEN	; SXLOWEN (80386SX MODE)
SXSWPEN	; SXSWPEN (80386SX MODE)
SYSCLK	; SYSTEM CLOCK
TC	; TERMINAL COUNT

INPUT/OUTPUT

A2-26,29,31	; PROCESSOR ADDRESS BUS
D0-31	; DATA BUS
DP0-3	; DATA PARITY
IOR	; I/O READ
IOW	; I/O WRITE
LA20	; EARLY ADDRESS 20
MEMR	; REMORY READ
MEMW	; MEMORY WRITE
RA0-2,4-8/ED0-7	; DRAM ADDRESS BITS/ EDATA BITS
REFRESH	; REFRESH
SA0,1	; SYSTEM ADDRESS 0,1
SBHE	; SYSTEM BUS HIGH ENABLE
SD0-15	; AT DATA BUS
SMI	; SYSTEM MANAGEMENT INTERRUPT

(VDD3V = +3.3 to 5V, VDD5V = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	AEN	46	I/O	MEMW	88	-	VDD3V	123	O	CAS11	166	-	GND
2	O	BALE	47	I/O	MEMR	89	I	BE2	124	O	CAS10	167	I/O	D9
3	O	SYSCLK	48	I/O	SA1		I	SXA1	125	I	ADS	168	I/O	D10
4	O	LOWMEG	49	I/O	SA0	90	I	BE1	126	I	W/R	169	I/O	D11
	O	SMEMR	50	O	MDEN		I	SXBHE	127	I	D/C	170	I/O	D12
5	I/O	SD15	51	O	MDIR	91	I	BE0	128	I	M/IO	171	I/O	D13
6	I/O	SD14	52	O	NMI		I	SXBLE	129	I	PDREF	172	I/O	D14
7	I/O	SD13	53	O	DRMWR	92	I	NPERR	130	I	LDS32	173	-	VDD3V
8	I/O	SD12	54	O	INTRQ		I	FERR	131	-	GND	174	I/O	D15
9	I/O	SD11	55	I/O	A31	93	O	BRDY486	132	I	PMCIN	175	I/O	D16
10	I/O	SD10		O	SXLOWEN	94	I	NPBUSY	133	I	SUSPA	176	I/O	D17
11	I/O	SD9	56	I/O	A29		O	GPREGWR		I	DFS RDY	177	I/O	D18
12	I/O	SD8		O	SUSP	95	-	GND	134	I	PCHK486	178	I/O	D19
13	I/O	SD7		O	STP REQ	96	I	3VBUFFER	135	I	BLAST	179	I/O	D20
14	-	GND		O	DFS REQ		O	ROMBA16	136	I/O	RA0/ED0	180	I/O	D21
15	I/O	SD6	57	I	A27	97	I	3VCORE	137	I/O	RA1/ED1	181	-	GND
16	I/O	SD5		O	SXSWPEN		O	ROMBA17	138	I/O	RA2/ED2	182	I/O	D22
17	-	VDD5V	58	I/O	A26	98	I	SXM	139	-	VDD3V	183	I/O	D23
18	I/O	SD4	59	I/O	A25		O	ROMBA18	140	O	RA3A/CS3	184	I/O	D24
19	I/O	SD3	60	I/O	A24	99	O	CPURES	141	O	RA3B/CS4	185	I/O	D25
20	I/O	SD2	61	I/O	A23	100	O	NPRST	142	I/O	RA4/ED3	186	I/O	D26
21	I/O	SD1	62	I/O	A22	101	I	WTKMODE	143	I/O	RA5/ED4	187	I/O	D27
22	I/O	SD0	63	I/O	A21		O	SMIRDY	144	I/O	RA6/ED5	188	I/O	D28
23	I	CLK14	64	I/O	A20		O	FLUSH	145	I/O	RA7/ED6	189	I/O	D29
24	I	MASTER	65	I/O	A19	102	I/O	SMI	146	-	GND	190	-	VDD3V
25	I	IOCK	66	-	GND	103	I	MODE486	147	I/O	RA8/ED7	191	I/O	D30
26	I	IOCHRDY	67	I/O	A18		O	KEN	148	O	RA9/CS0	192	I/O	D31
27	I	ZEROWS	68	I/O	A17	104	I	BCLK2	149	O	RA10/CS1	193	I	IRQSET0
28	-	GND	69	I/O	A16	105	I	OSCIN	150	O	RA11/CS2	194	-	GND
29	I	MEMCS16	70	I/O	A15	106	O	CPUCLK	151	I	1X/2X	195	I	IRQSET1
30	I	IOCS16	71	-	VDD3V	107	O	LBCLK		O	A20GATE	196	I	SMIADS
31	I	DRQ7	72	I/O	A14	108	I	EXCOP	152	O	RDY486		I	SMIACT
32	I	DRQ6	73	I/O	A13		O	EADS	153	I	CLKTEST	197	I	HOLDA
33	I	DRQ5	74	I/O	A12	109	-	GND		O	CSEN	198	I	RSTIN
34	I	DRQ3	75	I/O	A11	110	O	RAS0		O	TC	199	O	HOLDR
35	I	DRQ2	76	I/O	A10	111	O	RAS1	154	O	MXCTL0	200	O	SPKR
36	I	DRQ1	77	I/O	A9	112	O	RAS2	155	O	MXCTL1	201	I/O	DP0
37	-	VDD5V	78	I/O	A8	113	O	RAS3	156	O	MXCTL2	202	-	GND
38	I	DRQ0	79	I/O	A7	114	O	RAS4	157	I/O	D0	203	I/O	DP1
39	I	WTKIRQ13	80	-	GND	115	O	CAS03	158	I/O	D1	204	I/O	DP2
	O	SMEMW	81	I/O	A6	116	O	CAS02	159	I/O	D2	205	I/O	DP3
40	I/O	REFRESH	82	I/O	A5	117	-	GND	160	I/O	D3	206	O	EXBUSY
41	-	GND	83	I/O	A4	118	O	CAS01	161	I/O	D4		O	GPREGRD
42	I/O	SBHE	84	I/O	A3	119	O	CAS00	162	I/O	D5	207	O	BS16
43	I/O	LA20	85	I/O	A2	120	-	VDD3V	163	I/O	D6	208	O	DACKEN
44	I/O	IOW	86	I	RDYIN	121	O	CAS13	164	I/O	D7			
45	I/O	IOR	87	I	BE3	122	O	CAS12	165	I/O	D8			

INPUT

1X/2X ; SINGLE/DOUBLE PHASE CPU CLOCK
3VBUFFER ; 3VOLT BUFFER
3VCORE ; 3VOLT CORE
A27 ; PROCESSOR ADDRESS BUS (80486 AND 80386DX MODE)
ADS ; ADDRESS STATUS
BCLK2 ; BUS CLOCK
BE0-3 ; BYTE ENABLE 0-3 (80386DX OR 80486 MODE)
BLAST ; BLAST (80486 MODE)
CLK14 ; CLOCK 14 (14.318MHz)
CLKTEST ; CLOCK TEST
D/C ; DATA CONTROL
DFS RDY ; DFS READY FOR IBM CPUS
DRQ0-3,5-7 ; DRQ
EXCOP ; EXTERNAL 80387 CO-PROCESSOR
FERR ; FLOATING POINT ERROR (80486 MODE)
HOLDA ; HOLD ACKNOWLEDGE
IOCHRDY ; I/O CHANNEL READY
IOCK ; I/O CHANNEL CHECK
IOCS16 ; 16-BIT I/O CYCLE
IRQSET0,1 ; INTERRUPT REQUEST SET0,1
LDS32 ; LOCAL DATA SIZE 32
M/IO ; MEMORY OR I/O
MASTER ; MASTER
MEMCS16 ; 16-BIT MEMORY CYCLE
MODE486 ; 80386/80486 MODE
NPBUSY ; NUMERIC PROCESSOR BUSY
NPERR ; NUMERIC PROCESSOR ERROR (80386 MODE)
OSCIN ; OSCILLATOR IN
PCHK486 ; PARITY CHECK 80486
PDREF ; POWER DOWN REFRESH
PMCIN ; POWER MANAGEMENT CONTROL
RDYIN ; PROCESSOR READY IN
RSTIN ; SYSTEM RESET
SMIACT ; SYSTEM MANAGEMENT INTERRUPT ACTIVE FOR INTEL CPU
SMIADS ; SYSTEM MANAGEMENT INTERRUPT ADDRESS STROBE FOR AMD AND SYRIX CPU
SUSPA ; SUSPEND ACKNOWLEDGE FOR CYRIX CPUS
SXA1 ; SX PROCESSOR ADDRESS BIT 1 (80386SX MODE)
SXBHE ; SX BUS HIGH ENABLE (80386SX MODE)
SXBLE ; SX BUS LOW ENABLE (80386SX MODE)
SXM ; 80386SX OR 386/486 MODE SELECT
W/R ; WRITE OR READ
WTKIRQ13 ; WEITEK IRQ13 (IN WEITEK MODE)
WTKMODE ; WEITEK MODE
ZEROWS ; ZERO WAIT STATE

SECTION 7
ELECTRICAL PARTS LIST

7-1. NOTES ON SPARE PARTS

(1) Safety Related Components Warning

Components marked ⚠ on the electrical parts list are critical safety. Replace only with the components specified.

(2) Standardization of Parts

Replacement parts supplied from the Sony Parts Center will sometimes have a different shape or external appearance from the parts originally used in the unit. This is due to improvements, engineering changes, or standardization of parts.
This manual's electrical parts list indicate the part numbers of current standard parts.

(3) Stock of Parts

The parts marked with an "o" in the SP column are not normally required for routine service work. Orders for parts marked "o" will be processed, but allow additional time for delivery.

(4) Units for Capacitors and Resistors

The following units are assumed in electrical parts list unless otherwise specified.

Capacitors : μF
Resistors : Ω

7-2. ELECTRICAL PARTS LIST

CPU-249 BOARD (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-191-A	o	MOUNTED CIRCUIT BOARD, CPU-249
1pc	2-832-007-00	s	BUSHING (K), INSULATING
3pcs	7-621-255-65	s	SCREW +P 2x10
3pcs	7-622-205-05	s	NUT M2 TYPE2
4pcs	7-682-947-01	s	SCREW +PSW 3x6
BZ101	1-529-025-00	s	BUZZER
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C103	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C104	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C105	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C106	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C108	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C110	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C111	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C112	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C113	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C114	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C115	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C116	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C117	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C118	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C119	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C120	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C121	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C122	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C123	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C124	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C125	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C126	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C127	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C128	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C129	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C130	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C131	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C132	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C133	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C134	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C135	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C136	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C137	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C150	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C151	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C152	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C153	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C154	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C155	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C156	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C157	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C158	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C159	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C160	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C161	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C162	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C163	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C164	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C165	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C166	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C167	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C168	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C169	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C170	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C171	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C172	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C173	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C174	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C175	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C176	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C177	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C178	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C179	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C180	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C181	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C182	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C183	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C184	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C185	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C186	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C187	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C188	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C189	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C190	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C191	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C192	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C193	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C194	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C195	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C196	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C197	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C198	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C199	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C200	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C203	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C206	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C207	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C208	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C209	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C210	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C212	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C213	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C214	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C215	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C216	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C217	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C220	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C221	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C222	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C223	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C224	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C225	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C226	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C227	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C228	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C229	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C300	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C301	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C302	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C303	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C304	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C305	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C306	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C307	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C308	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C309	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C310	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C500	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C503	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C504	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C505	1-162-923-11	s	CERAMIC, CHIP 47pF 5% 50V
C506	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C507	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C508	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C509	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C510	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C511	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C512	1-126-399-11	s	ELECT, CHIP 10uF 20% 35V
C513	1-126-399-11	s	ELECT, CHIP 10uF 20% 35V
C901	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C902	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C903	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C904	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
CN101	1-750-832-21	o	CONNECTOR, BB 120P, FEMALE
CN102	1-774-776-11	s	CONNECTOR, PC CARD 68P
CN103	1-766-194-11	o	CONNECTOR, D-SUB 9P, MALE
CN104	1-766-194-11	o	CONNECTOR, D-SUB 9P, MALE
CNI122	1-540-151-21	s	SOCKET, IC 32P
D101	8-719-820-50	s	LED TLY205, YELLOW
D111	8-719-820-61	s	DIODE 1SS294
D112	8-719-820-61	s	DIODE 1SS294
D113	8-719-820-61	s	DIODE 1SS294
D301	8-719-158-55	s	DIODE RD15SB
D302	8-719-158-55	s	DIODE RD15SB
D303	8-719-158-55	s	DIODE RD15SB
D304	8-719-158-55	s	DIODE RD15SB
D305	8-719-158-55	s	DIODE RD15SB
D306	8-719-158-55	s	DIODE RD15SB
D307	8-719-158-55	s	DIODE RD15SB
D308	8-719-158-55	s	DIODE RD15SB
D309	8-719-158-55	s	DIODE RD15SB
D310	8-719-158-55	s	DIODE RD15SB
D311	8-719-158-55	s	DIODE RD15SB
D312	8-719-158-55	s	DIODE RD15SB
D313	8-719-158-55	s	DIODE RD15SB
D314	8-719-158-55	s	DIODE RD15SB
D315	8-719-158-55	s	DIODE RD15SB
D316	8-719-158-55	s	DIODE RD15SB
D401	8-719-158-55	s	DIODE RD15SB
D402	8-719-158-55	s	DIODE RD15SB
D403	8-719-158-55	s	DIODE RD15SB
D404	8-719-158-55	s	DIODE RD15SB
D405	8-719-158-55	s	DIODE RD15SB

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
D406	8-719-158-55	s	DIODE RD15SB
D407	8-719-158-55	s	DIODE RD15SB
D408	8-719-158-55	s	DIODE RD15SB
D409	8-719-158-55	s	DIODE RD15SB
D410	8-719-158-55	s	DIODE RD15SB
D411	8-719-158-55	s	DIODE RD15SB
D412	8-719-158-55	s	DIODE RD15SB
D413	8-719-158-55	s	DIODE RD15SB
D414	8-719-158-55	s	DIODE RD15SB
D415	8-719-158-55	s	DIODE RD15SB
D416	8-719-158-55	s	DIODE RD15SB
D601	8-719-158-55	s	DIODE RD15SB
D602	8-719-158-55	s	DIODE RD15SB
D603	8-719-158-55	s	DIODE RD15SB
D604	8-719-158-55	s	DIODE RD15SB
D605	8-719-158-55	s	DIODE RD15SB
D606	8-719-158-55	s	DIODE RD15SB
D607	8-719-158-55	s	DIODE RD15SB
D608	8-719-158-55	s	DIODE RD15SB
E101	1-535-757-11	s	TERMINAL, TP
E102	1-535-757-11	s	TERMINAL, TP
E103	1-535-757-11	s	TERMINAL, TP
E104	1-535-757-11	s	TERMINAL, TP
E105	1-535-757-11	s	TERMINAL, TP
E106	1-535-757-11	s	TERMINAL, TP
FL301	1-233-326-11	s	FILTER, NOISE, CHIP
FL302	1-233-326-11	s	FILTER, NOISE, CHIP
FL303	1-233-326-11	s	FILTER, NOISE, CHIP
FL304	1-233-326-11	s	FILTER, NOISE, CHIP
FL305	1-233-326-11	s	FILTER, NOISE, CHIP
FL306	1-233-326-11	s	FILTER, NOISE, CHIP
FL307	1-233-326-11	s	FILTER, NOISE, CHIP
FL308	1-233-326-11	s	FILTER, NOISE, CHIP
FL401	1-233-326-11	s	FILTER, NOISE, CHIP
FL402	1-233-326-11	s	FILTER, NOISE, CHIP
FL403	1-233-326-11	s	FILTER, NOISE, CHIP
FL404	1-233-326-11	s	FILTER, NOISE, CHIP
FL405	1-233-326-11	s	FILTER, NOISE, CHIP
FL406	1-233-326-11	s	FILTER, NOISE, CHIP
FL407	1-233-326-11	s	FILTER, NOISE, CHIP
FL408	1-233-326-11	s	FILTER, NOISE, CHIP
IC101	8-759-365-29	s	IC KU80486SXSA-25
IC102	8-759-195-75	o	IC WD8110LVZZ25
IC103	8-759-195-76	o	IC WD7625LVSS
IC104	8-759-365-27	s	IC WD8122LVZX
IC105	8-759-452-05	s	IC PI74FCT162Q245ATAX
IC106	8-759-452-05	s	IC PI74FCT162Q245ATAX
IC107	8-759-451-79	s	IC KM416C1200AT-6T
IC108	8-759-451-79	s	IC KM416C1200AT-6T
IC109	8-759-451-79	s	IC KM416C1200AT-6T
IC110	8-759-451-79	s	IC KM416C1200AT-6T
IC111	8-759-185-63	s	IC TC74VHCT04F(EL)
IC112	8-759-399-44	s	IC TC74VHCT08F(EL)
IC113	8-759-973-71	s	IC TL7705CPS-B
IC114	8-759-185-80	s	IC TC74VHCT138F(EL)
IC115	8-759-988-27	s	IC SN75188NS
IC116	8-759-988-27	s	IC SN75188NS

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
IC117	8-759-988-24	s	IC SN75189ANS
IC118	8-759-988-24	s	IC SN75189ANS
IC119	8-759-988-24	s	IC SN75189ANS
IC120	8-759-461-99	o	IC PALCE16V8H-15SC/4/T-RAP05V1
IC121	8-759-452-05	s	IC PI74FCT162Q245ATAX
IC122	8-759-465-70	o	IC AM29F010-120JC-RAP01V1
IC123	8-759-451-77	s	IC E28F016SA-100
IC124	8-759-451-77	s	IC E28F016SA-100
IC125	8-759-988-66	s	IC MB89371APF
IC126	8-759-927-29	s	IC SN74HCU04NS
IC127	8-759-272-21	s	IC TC74VHCT541F
IC128	8-759-443-66	s	IC SN74ABT273PW-E05
IC129	8-759-926-95	s	IC SN74HC4020ANS
IC130	8-759-462-00	o	IC PALCE16V8H-15SC/4/T-RAP06V1
IC131	8-759-365-30	s	IC RF5C296
IC132	8-759-268-95	s	IC SN74HCT00ANS-E05
IC133	8-759-452-05	s	IC PI74FCT162Q245ATAX
IC134	8-759-462-27	o	IC PLSI2032-80LT44-RAP06V1
IC135	8-759-452-06	s	IC PI74FCT162Q244ATAX
IC136	8-759-452-06	s	IC PI74FCT162Q244ATAX
IC137	8-759-452-07	s	IC PI74FCT2244TLX
L101	1-408-771-11	s	INDUCTOR, CHIP 3.3uH
PS201 ⚠	1-576-212-21	s	FUSE, CHIP 1.25A 125V
PS202 ⚠	1-576-212-21	s	FUSE, CHIP 1.25A 125V
Q101	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q102	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q201	8-729-120-53	s	TRANSISTOR 2SJ132-Z
Q202	8-729-120-53	s	TRANSISTOR 2SJ132-Z
R101	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R102	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R103	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R104	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R105	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R106	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R107	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R108	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R109	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R110	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R111	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R112	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R113	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R114	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R115	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R116	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R117	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R118	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R119	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R120	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R121	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R122	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R123	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R124	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R125	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R126	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R127	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R128	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R129	1-216-801-11	s	METAL, CHIP 22 5% 1/16W

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R130	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R131	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R132	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R133	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R134	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R135	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R136	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R137	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R138	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R139	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R140	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R141	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R142	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R143	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R144	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R145	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R146	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R147	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R148	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R149	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R150	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R151	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R152	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R153	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R154	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R155	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R156	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R157	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R158	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R159	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R160	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R161	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R162	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R163	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R164	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R165	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R166	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R167	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R168	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R169	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R170	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R171	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R172	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R173	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R174	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R175	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R176	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R177	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R178	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R179	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R180	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R181	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R182	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R183	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R184	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R185	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R186	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R187	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R188	1-216-801-11	s	METAL, CHIP 22 5% 1/16W

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R189	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R190	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R191	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R192	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R193	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R194	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R195	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R196	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R197	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R198	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R199	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R200	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R201	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R202	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R203	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R204	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R205	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R206	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R207	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R208	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R209	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R210	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R211	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R212	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R213	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R214	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R215	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R216	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R217	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R218	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R219	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R220	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R221	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R222	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R223	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R224	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
RB101	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB102	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB103	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB104	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB105	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB106	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB107	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB108	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB109	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB110	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB111	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB112	1-239-419-11	s	RESISTOR BLOCK, CHIP 470X4
RB113	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB114	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB115	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB116	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB117	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB118	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB119	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB120	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB121	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB122	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4

(CPU-249 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
RB123	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB124	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB125	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB126	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB127	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB128	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB129	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB130	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB131	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB132	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB133	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB134	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB135	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
TP101	1-535-757-11	s	TERMINAL, TP
X101	1-760-969-21	s	VCO, CRYSTAL 25.00MHz
X102	1-760-965-21	s	CRYSTAL 48.00MHz
X103	1-579-994-12	s	RESONATOR, CERAMIC 14.31818MHz
X105	1-760-464-11	s	CRYSTAL 4.9152MHz

DAD-31 BOARD (PCS-P300)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-195-A	o	MOUNTED CIRCUIT BOARD, DAD-31
1pc	3-179-084-01	s	LEVER (R), PC BOARD
1pc	3-179-085-01	s	LEVER (L), PC BOARD
1pc	7-682-649-09	s	SCREW +PS 3x10
1pc	7-682-947-01	s	SCREW +PSW 3x6
2pcs	7-685-871-01	s	SCREW +BVTT 3x6 (S)
C1	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C2	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C3	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C4	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C5	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C6	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C7	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C8	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C9	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C10	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C12	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C13	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C16	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C17	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C18	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C19	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C20	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C21	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C22	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C23	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C24	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C25	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C26	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C27	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C41	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C42	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C43	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C44	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C45	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C46	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C47	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C48	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C49	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C50	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C51	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C52	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C53	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C54	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C55	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C56	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C57	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C58	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C59	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C60	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C61	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C62	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C63	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C64	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C65	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C66	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C67	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C68	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
C69	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C70	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C71	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C72	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C73	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C74	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C75	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C76	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C77	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C78	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C79	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C83	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C84	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C85	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C86	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C91	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C92	1-162-923-11	s	CERAMIC, CHIP 47pF 5% 50V
C93	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C94	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C95	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C96	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C97	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C98	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C99	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C100	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-126-401-11	s	ELECT, CHIP 1uF 20% 50V
C103	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C104	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C105	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C106	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C107	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C108	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C109	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C110	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C111	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C112	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C113	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C114	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C115	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C116	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C117	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C119	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C120	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C121	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C122	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C123	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C124	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C125	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C126	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C127	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C128	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C129	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C130	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C131	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C132	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C133	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C134	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C135	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
C136	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C137	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C138	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C139	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C140	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C141	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C142	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C151	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C152	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C155	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C156	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C157	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C158	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C159	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C160	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C161	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C162	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C163	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C164	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C165	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C166	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C167	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C168	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C169	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C175	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C176	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C180	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C181	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C182	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C183	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C184	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C185	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C186	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C187	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C188	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C189	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C190	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C191	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C192	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C193	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C194	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C195	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C196	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C198	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C199	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C200	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C203	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C204	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-126-400-11	s	ELECT, CHIP 22uF 20% 35V
C212	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C213	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C214	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C215	1-126-400-11	s	ELECT, CHIP 22uF 20% 35V
C216	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C221	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C222	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
C223	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C224	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C225	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C226	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C227	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C228	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C229	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C230	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C231	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C234	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C235	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C236	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C241	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C242	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C243	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C244	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C245	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C246	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C247	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C248	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C249	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C250	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C251	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C252	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C253	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C254	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C255	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C256	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C257	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C258	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C259	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C260	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C261	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C262	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C263	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C271	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C272	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C501	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C551	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C552	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C553	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C554	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C555	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C556	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C557	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C558	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C559	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C560	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C561	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C562	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C563	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C564	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C565	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C566	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C567	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C568	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C569	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C570	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C571	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
C572	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C573	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C574	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C575	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C576	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C577	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
CN501	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN502	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN503	1-566-848-11	s	CONNECTOR, CIRCULAR 4P(S), FEMALE
CN504	1-562-941-41	s	JACK, PIN 1P, FEMALE
CN505	1-566-848-11	s	CONNECTOR, CIRCULAR 4P(S), FEMALE
CN506	1-562-941-41	s	JACK, PIN 1P, FEMALE
E1	1-535-757-11	s	TERMINAL, TP
E2	1-535-757-11	s	TERMINAL, TP
E11	1-535-757-11	s	TERMINAL, TP
E12	1-535-757-11	s	TERMINAL, TP
FL1	1-233-668-21	s	FILTER, BAND PASS
FL2	1-239-290-11	s	FILTER, LOW-PASS
FL3	1-239-290-11	s	FILTER, LOW-PASS
FL6	1-233-501-11	s	FILTER, LOW PASS
FL7	1-233-501-11	s	FILTER, LOW PASS
FL8	1-239-290-11	s	FILTER, LOW-PASS
FL9	1-239-290-11	s	FILTER, LOW-PASS
FL51	1-239-825-11	s	FILTER, CHIP, NOISE
FL52	1-239-825-11	s	FILTER, CHIP, NOISE
FL53	1-239-825-11	s	FILTER, CHIP, NOISE
FL54	1-239-825-11	s	FILTER, CHIP, NOISE
FL55	1-239-825-11	s	FILTER, CHIP, NOISE
FL56	1-239-825-11	s	FILTER, CHIP, NOISE
IC1	8-752-372-78	s	IC CXD2024AQ
IC2	8-752-062-80	s	IC CXA1686M
IC3	8-759-361-86	s	IC MC44011FN
IC4	8-759-361-85	s	IC MC44140DWR2
IC5	8-759-081-44	s	IC TC74VHC04F
IC6	8-759-186-39	s	IC TC74VHC74F
IC7	8-759-186-53	s	IC TC74VHC163F
IC8	8-759-186-53	s	IC TC74VHC163F
IC9	8-759-186-53	s	IC TC74VHC163F
IC10	8-759-239-55	s	IC TC74HC123AF
IC11	8-759-239-58	s	IC TC74HC221AF
IC15	8-759-447-90	s	IC TLC5733AIPM
IC16	8-759-510-71	s	IC UPC358G2-E2
IC17	8-759-925-90	s	IC SN74HC74ANS
IC18	8-752-380-71	s	IC CXD1913Q
IC19	8-752-870-04	s	IC CXP5068H-242Q
IC21	8-759-926-12	s	IC SN74HC139ANS
IC22	8-759-925-74	s	IC TC74HC04ANS
IC31	8-759-701-59	s	IC NJM78M09FA
IC32	8-759-069-28	s	IC PQ05RF11
IC33	8-759-245-82	s	IC TA79009S
IC52	8-759-048-79	s	IC UPD65016GB-041-3B4
IC54	8-759-175-29	s	IC TC74VHC374F
IC55	8-759-174-16	s	IC TC74VHC244F
IC56	8-759-186-39	s	IC TC74VHC74F
IC57	8-759-186-39	s	IC TC74VHC74F
IC58	8-759-186-39	s	IC TC74VHC74F
IC61	8-759-186-51	s	IC TC74VHC157F

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
IC62	8-759-186-51	s	IC TC74VHC157F
IC64	8-759-185-82	s	IC TC74VHC153F(EL)
IC65	8-759-185-82	s	IC TC74VHC153F(EL)
IC66	8-759-185-82	s	IC TC74VHC153F(EL)
IC67	8-759-185-82	s	IC TC74VHC153F(EL)
IC68	8-759-185-82	s	IC TC74VHC153F(EL)
IC69	8-759-185-82	s	IC TC74VHC153F(EL)
IC70	8-759-185-82	s	IC TC74VHC153F(EL)
IC71	8-759-185-82	s	IC TC74VHC153F(EL)
IC72	8-759-186-13	s	IC TC74VHCT374F(EL)
IC73	8-759-186-13	s	IC TC74VHCT374F(EL)
IC74	8-759-269-09	s	IC SN74HCT04ANS
IC75	8-759-174-16	s	IC TC74VHC244F
IC76	8-759-186-51	s	IC TC74VHC157F
IC78	8-759-037-79	s	IC MC74HC163AF
IC79	8-759-186-39	s	IC TC74VHC74F
IC80	8-759-186-39	s	IC TC74VHC74F
IC81	8-759-186-26	s	IC TC74VHC02F
IC83	8-759-374-69	s	IC UPD65641GD-188-5BD
IC84	8-752-365-22	s	IC CXK581000AM-10LL
IC85	8-752-365-22	s	IC CXK581000AM-10LL
IC86	8-759-926-69	s	IC SN74HC377ANS
IC87	8-759-926-18	s	IC SN74HC157ANS
IC88	8-759-186-56	s	IC TC74VHC174F
IC89	8-759-926-67	s	IC SN74HC374ANS
IC90	8-759-099-37	s	IC SN74HCT74ANS-E05
IC91	8-759-272-05	s	IC TC74VHCT244F
IC92	8-759-272-05	s	IC TC74VHCT244F
IC93	8-759-272-05	s	IC TC74VHCT244F
IC94	8-759-272-05	s	IC TC74VHCT244F
IC95	8-759-186-12	s	IC TC74VHCT373F(EL)
IC96	8-759-186-12	s	IC TC74VHCT373F(EL)
IC97	8-759-186-12	s	IC TC74VHCT373F(EL)
IC98	8-759-186-12	s	IC TC74VHCT373F(EL)
IC99	8-759-391-67	o	IC GAL20V8B-25QJ-RAP00V1
IC100	8-759-099-39	s	IC SN74HCT32ANS-E05
IC101	8-759-269-06	s	IC SN74HCT02ANS-E05
IC102	8-759-154-60	s	IC UPD71055GB-10-3B4
IC103	8-759-462-01	o	IC PALCE16V8H-15SC/4/T-RAP07V1
JC1	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC3	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC21	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC22	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC23	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC24	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
L1	1-408-791-00	s	INDUCTOR, CHIP 150uH
L2	1-408-791-00	s	INDUCTOR, CHIP 150uH
L3	1-408-777-00	s	INDUCTOR, CHIP 10uH
L4	1-408-777-00	s	INDUCTOR, CHIP 10uH
L5	1-408-777-00	s	INDUCTOR, CHIP 10uH
L6	1-408-785-21	s	INDUCTOR, CHIP 47uH
L7	1-408-777-00	s	INDUCTOR, CHIP 10uH
L8	1-408-785-21	s	INDUCTOR, CHIP 47uH
L11	1-408-777-00	s	INDUCTOR, CHIP 10uH
L12	1-408-777-00	s	INDUCTOR, CHIP 10uH
L14	1-408-785-21	s	INDUCTOR, CHIP 47uH
L15	1-408-785-21	s	INDUCTOR, CHIP 47uH
L16	1-408-777-00	s	INDUCTOR, CHIP 10uH

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
L17	1-408-785-21	s	INDUCTOR, CHIP 47uH
Q1	8-729-117-32	s	TRANSISTOR 2SC4177
Q2	8-729-117-32	s	TRANSISTOR 2SC4177
Q3	8-729-117-32	s	TRANSISTOR 2SC4177
Q4	8-729-117-32	s	TRANSISTOR 2SC4177
Q5	8-729-117-32	s	TRANSISTOR 2SC4177
Q6	8-729-117-32	s	TRANSISTOR 2SC4177
Q7	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q8	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q9	8-729-117-32	s	TRANSISTOR 2SC4177
Q10	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q11	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q12	8-729-117-32	s	TRANSISTOR 2SC4177
Q13	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q14	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q15	8-729-117-32	s	TRANSISTOR 2SC4177
Q16	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q17	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q18	8-729-117-32	s	TRANSISTOR 2SC4177
Q19	8-729-117-32	s	TRANSISTOR 2SC4177
Q20	8-729-117-32	s	TRANSISTOR 2SC4177
Q21	8-729-117-32	s	TRANSISTOR 2SC4177
Q22	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q23	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q24	8-729-117-32	s	TRANSISTOR 2SC4177
Q25	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q26	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q27	8-729-117-32	s	TRANSISTOR 2SC4177
Q28	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q29	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q30	8-729-117-32	s	TRANSISTOR 2SC4177
Q31	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q32	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q33	8-729-117-32	s	TRANSISTOR 2SC4177
Q34	8-729-117-32	s	TRANSISTOR 2SC4177
Q35	8-729-117-32	s	TRANSISTOR 2SC4177
Q36	8-729-117-32	s	TRANSISTOR 2SC4177
Q41	8-729-117-32	s	TRANSISTOR 2SC4177
Q42	8-729-117-32	s	TRANSISTOR 2SC4177
Q43	8-729-117-32	s	TRANSISTOR 2SC4177
Q44	8-729-117-32	s	TRANSISTOR 2SC4177
Q45	8-729-117-32	s	TRANSISTOR 2SC4177
Q46	8-729-117-32	s	TRANSISTOR 2SC4177
Q47	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q48	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q49	8-729-117-32	s	TRANSISTOR 2SC4177
Q51	8-729-117-32	s	TRANSISTOR 2SC4177
Q52	8-729-117-32	s	TRANSISTOR 2SC4177
Q55	8-729-117-32	s	TRANSISTOR 2SC4177
Q56	8-729-117-32	s	TRANSISTOR 2SC4177
Q57	8-729-117-32	s	TRANSISTOR 2SC4177
Q61	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q62	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q63	8-729-117-32	s	TRANSISTOR 2SC4177
Q64	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q71	8-729-117-32	s	TRANSISTOR 2SC4177
Q72	8-729-117-32	s	TRANSISTOR 2SC4177
Q75	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
Q77	8-729-117-32	s	TRANSISTOR 2SC4177
Q81	8-729-117-32	s	TRANSISTOR 2SC4177
Q82	8-729-117-32	s	TRANSISTOR 2SC4177
Q84	8-729-117-32	s	TRANSISTOR 2SC4177
Q85	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q86	8-729-117-32	s	TRANSISTOR 2SC4177
Q87	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q90	8-729-117-32	s	TRANSISTOR 2SC4177
Q91	8-729-117-32	s	TRANSISTOR 2SC4177
Q92	8-729-117-32	s	TRANSISTOR 2SC4177
Q93	8-729-117-32	s	TRANSISTOR 2SC4177
Q94	8-729-117-32	s	TRANSISTOR 2SC4177
Q95	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q96	8-729-117-32	s	TRANSISTOR 2SC4177
Q97	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q98	8-729-117-32	s	TRANSISTOR 2SC4177
Q99	8-729-117-32	s	TRANSISTOR 2SC4177
Q100	8-729-117-32	s	TRANSISTOR 2SC4177
Q101	8-729-117-32	s	TRANSISTOR 2SC4177
Q102	8-729-117-32	s	TRANSISTOR 2SC4177
Q103	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q104	8-729-117-32	s	TRANSISTOR 2SC4177
Q105	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q106	8-729-117-32	s	TRANSISTOR 2SC4177
Q107	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q108	8-729-117-32	s	TRANSISTOR 2SC4177
Q111	8-729-117-32	s	TRANSISTOR 2SC4177
Q112	8-729-117-32	s	TRANSISTOR 2SC4177
Q113	8-729-117-32	s	TRANSISTOR 2SC4177
Q114	8-729-117-32	s	TRANSISTOR 2SC4177
Q115	8-729-117-32	s	TRANSISTOR 2SC4177
Q116	8-729-117-32	s	TRANSISTOR 2SC4177
Q117	8-729-117-32	s	TRANSISTOR 2SC4177
Q118	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q119	8-729-117-32	s	TRANSISTOR 2SC4177
Q120	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q121	8-729-117-32	s	TRANSISTOR 2SC4177
Q122	8-729-117-32	s	TRANSISTOR 2SC4177
Q123	8-729-117-32	s	TRANSISTOR 2SC4177
Q124	8-729-117-32	s	TRANSISTOR 2SC4177
Q125	8-729-117-32	s	TRANSISTOR 2SC4177
Q126	8-729-117-32	s	TRANSISTOR 2SC4177
Q127	8-729-117-32	s	TRANSISTOR 2SC4177
Q128	8-729-117-32	s	TRANSISTOR 2SC4177
Q129	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q130	8-729-117-32	s	TRANSISTOR 2SC4177
Q131	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q132	8-729-117-32	s	TRANSISTOR 2SC4177
Q133	8-729-117-32	s	TRANSISTOR 2SC4177
Q134	8-729-117-32	s	TRANSISTOR 2SC4177
Q135	8-729-117-32	s	TRANSISTOR 2SC4177
Q136	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q137	8-729-117-32	s	TRANSISTOR 2SC4177
Q138	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q501	8-729-117-32	s	TRANSISTOR 2SC4177
R1	1-218-665-11	s	METAL 75 0.50% 1/16W
R2	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R3	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R4	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R5	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R6	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R7	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W
R8	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R9	1-218-665-11	s	METAL 75 0.50% 1/16W
R10	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R11	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R12	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R13	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R14	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R15	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W
R16	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R17	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R18	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R19	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R20	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R21	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R22	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R23	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R24	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R25	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R26	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R27	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R28	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R29	1-218-665-11	s	METAL 75 0.50% 1/16W
R30	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R31	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R32	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R33	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R34	1-218-665-11	s	METAL 75 0.50% 1/16W
R35	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R36	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R37	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R38	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R39	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R40	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R41	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R42	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R44	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R45	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R47	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R48	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R49	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R50	1-216-826-11	s	METAL, CHIP 2.7k 5% 1/16W
R51	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R52	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R53	1-218-692-11	s	METAL 1k 0.50% 1/16W
R54	1-218-692-11	s	METAL 1k 0.50% 1/16W
R55	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R56	1-216-816-11	s	METAL, CHIP 390 5% 1/16W
R57	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R58	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R59	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R61	1-218-665-11	s	METAL 75 0.50% 1/16W
R62	1-216-843-11	s	METAL, CHIP 68k 5% 1/16W
R63	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R64	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R65	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R66	1-216-809-11	s	METAL, CHIP 100 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R67	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R68	1-218-692-11	s	METAL 1k 0.50% 1/16W
R69	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R70	1-218-692-11	s	METAL 1k 0.50% 1/16W
R71	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R72	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R73	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R74	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R75	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R76	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R77	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R78	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R79	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R80	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R81	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R82	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R83	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R84	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R85	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R86	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R87	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R88	1-216-848-11	s	METAL, CHIP 180k 5% 1/16W
R89	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R90	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R91	1-218-703-11	s	METAL 3k 0.50% 1/16W
R92	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R93	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R94	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R95	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R97	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R98	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R99	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R100	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R101	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R102	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R103	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R104	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R105	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R106	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R112	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R113	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R114	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R115	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R116	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W
R117	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R121	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R122	1-219-570-11	s	METAL 10M 5% 1/16W
R123	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R124	1-219-570-11	s	METAL 10M 5% 1/16W
R125	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R126	1-218-741-11	s	METAL, CHIP 110k 0.5% 1/16W
R128	1-216-834-11	s	METAL, CHIP 12k 5% 1/16W
R129	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R130	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R131	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R132	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R133	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R134	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R135	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R136	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R137	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R138	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R139	1-216-843-11	s	METAL, CHIP 68k 5% 1/16W
R140	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R141	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R142	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R143	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R144	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R145	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R146	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R147	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R148	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R149	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R150	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R151	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R152	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R153	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R154	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R155	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R156	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R161	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R162	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R163	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R164	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R165	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R166	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R167	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R174	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R176	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R177	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R178	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R179	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R180	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R181	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R182	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R185	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R186	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R187	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R188	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R193	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R194	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R195	1-218-686-11	s	METAL 560 0.50% 1/16W
R196	1-218-686-11	s	METAL 560 0.50% 1/16W
R197	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R198	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R199	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R200	1-216-814-11	s	METAL, CHIP 270 5% 1/16W
R201	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R202	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R203	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R204	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R205	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R206	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R207	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R208	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R209	1-218-686-11	s	METAL 560 0.50% 1/16W
R210	1-218-686-11	s	METAL 560 0.50% 1/16W
R211	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R212	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R213	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R214	1-216-814-11	s	METAL, CHIP 270 5% 1/16W
R215	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R216	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R217	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R218	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R219	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R220	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R223	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R224	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R225	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R226	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R227	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R228	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R229	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R232	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R233	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R241	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R242	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R243	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R244	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R245	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R246	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R247	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R248	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R249	1-216-826-11	s	METAL, CHIP 2.7k 5% 1/16W
R250	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R251	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R253	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R254	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R255	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R256	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R257	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R258	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R259	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R260	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R261	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R264	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R265	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R271	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R272	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R273	1-218-692-11	s	METAL 1k 0.50% 1/16W
R274	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R275	1-218-692-11	s	METAL 1k 0.50% 1/16W
R276	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R277	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R278	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R279	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R280	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R281	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R282	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R283	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R284	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R285	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R286	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R287	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R288	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R289	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R290	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R291	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R292	1-218-664-11	s	METAL 68 0.50% 1/16W
R293	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R294	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R295	1-218-692-11	s	METAL 1k 0.50% 1/16W
R296	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R297	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R298	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R299	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R300	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R301	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R302	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R303	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R304	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R305	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R306	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R307	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R308	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R309	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R310	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R311	1-218-664-11	s	METAL 68 0.50% 1/16W
R312	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R313	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R314	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R315	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R316	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R317	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R318	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R319	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R320	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R321	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R322	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R323	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R324	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R325	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R326	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R327	1-218-664-11	s	METAL 68 0.50% 1/16W
R341	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R342	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R344	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R345	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R350	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R501	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R502	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R503	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R504	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R505	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R506	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R508	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R509	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R511	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R512	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R513	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R514	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R515	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R516	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R517	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R518	1-216-809-11	s	METAL, CHIP 100 5% 1/16W

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
R519	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R521	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R522	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R523	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R524	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R525	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R526	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R527	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R528	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R529	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R530	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R531	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R532	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R534	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R535	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R537	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
RB1	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
RB2	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
RB3	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB4	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB7	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB8	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB9	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB10	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB11	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB15	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB16	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB21	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB22	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB23	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB24	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB25	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB26	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB27	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB28	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB29	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB30	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB31	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB32	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB33	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB34	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RV1	1-238-853-11	s	RES, ADJ, CERMET 1k
RV2	1-238-853-11	s	RES, ADJ, CERMET 1k
RV4	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV5	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV6	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV7	1-238-853-11	s	RES, ADJ, CERMET 1k
RV8	1-238-853-11	s	RES, ADJ, CERMET 1k
RV9	1-238-853-11	s	RES, ADJ, CERMET 1k
RV10	1-238-853-11	s	RES, ADJ, CERMET 1k
S1	1-572-658-21	s	SWITCH, ROTARY
THP1	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP2	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP3	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP4	1-810-106-11	s	THERMISTOR, POSITIVE 1k
TP2	1-535-757-11	s	TERMINAL, TP
TP3	1-535-757-11	s	TERMINAL, TP

(DAD-31 BOARD (PCS-P300))

Ref. No. or Q'ty	Part No.	SP	Description
TP5	1-535-757-11	s	TERMINAL, TP
TP6	1-535-757-11	s	TERMINAL, TP
TP7	1-535-757-11	s	TERMINAL, TP
TP8	1-535-757-11	s	TERMINAL, TP
TP9	1-535-757-11	s	TERMINAL, TP
TP11	1-535-757-11	s	TERMINAL, TP
TP12	1-535-757-11	s	TERMINAL, TP
TP13	1-535-757-11	s	TERMINAL, TP
TP14	1-535-757-11	s	TERMINAL, TP
TP15	1-535-757-11	s	TERMINAL, TP
TP16	1-535-757-11	s	TERMINAL, TP
TP17	1-535-757-11	s	TERMINAL, TP
TP18	1-535-757-11	s	TERMINAL, TP
TP19	1-535-757-11	s	TERMINAL, TP
TP20	1-535-757-11	s	TERMINAL, TP
TP21	1-535-757-11	s	TERMINAL, TP
TP22	1-535-757-11	s	TERMINAL, TP
TP23	1-535-757-11	s	TERMINAL, TP
TP24	1-535-757-11	s	TERMINAL, TP
X1	1-577-611-11	s	RESONATOR, CERAMIC 500kHz
X2	1-527-722-00	s	CRYSTAL 14.31818MHz
X5	1-527-722-00	s	CRYSTAL 14.31818MHz
X6	1-760-275-11	s	VCO, CRYSTAL 27.00MHz
X7	1-579-063-21	s	RESONATOR, CERAMIC 4.19MHz

DAD-31P BOARD (PCS-P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-194-A	o	MOUNTED CIRCUIT BOARD, DAD-31P
1pc	3-179-084-01	s	LEVER (R), PC BOARD
1pc	3-179-085-01	s	LEVER (L), PC BOARD
1pc	7-682-649-09	s	SCREW +PS 3x10
1pc	7-682-947-01	s	SCREW +PSW 3x6
2pcs	7-685-871-01	s	SCREW +BVTT 3x6 (S)
C1	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C2	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C3	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C4	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C5	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C6	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C7	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C8	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C9	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C10	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C12	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C13	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C16	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C17	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C18	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C19	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C20	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C21	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C22	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C23	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C24	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C25	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C26	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C27	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C41	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C42	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C43	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C44	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C45	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C46	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C47	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C48	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C49	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C50	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C51	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C52	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C53	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C54	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C55	1-162-917-11	s	CERAMIC, CHIP 15pF 5% 50V
C56	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C57	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C58	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C59	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C60	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C61	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C62	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C63	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C64	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C65	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C66	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C67	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C68	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C69	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C70	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C71	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C72	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C73	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C74	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C75	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C76	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C77	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C78	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C79	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C83	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C84	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C85	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C86	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C91	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C92	1-162-923-11	s	CERAMIC, CHIP 47pF 5% 50V
C93	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C94	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C95	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C96	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C97	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C98	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C99	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C100	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-126-401-11	s	ELECT, CHIP 1uF 20% 50V
C103	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C104	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C105	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C106	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C107	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C108	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C109	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C110	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C111	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C112	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C113	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C114	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C115	1-128-235-11	s	ELECT, CHIP 0.47uF 20% 50V
C118	1-162-920-11	s	CERAMIC, CHIP 27pF 5% 50V
C119	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C120	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C121	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C122	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C123	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C124	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C125	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C126	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C127	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C128	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C129	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C130	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C131	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C132	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C133	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C134	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C135	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C136	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C137	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C138	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C139	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C140	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C141	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C142	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C151	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C152	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C155	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C156	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C157	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C158	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C159	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C160	1-162-915-11	s	CERAMIC, CHIP 10pF 50V
C161	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C162	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C163	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C164	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C165	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C166	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C167	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C168	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C169	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C175	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C176	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C180	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C181	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C182	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C183	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C184	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C185	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C186	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C187	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C188	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C189	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C190	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C191	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C192	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C193	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C194	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C195	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C196	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C198	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C199	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C200	1-162-927-11	s	CERAMIC, CHIP 100pF 5% 50V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C203	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C204	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-126-400-11	s	ELECT, CHIP 22uF 20% 35V
C212	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C213	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C214	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C215	1-126-400-11	s	ELECT, CHIP 22uF 20% 35V
C216	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C221	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C222	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C223	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C224	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C225	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C226	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C227	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C228	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C229	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C230	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C231	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C234	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C235	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C236	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C241	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C242	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C243	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C244	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C245	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C246	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C247	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C248	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C249	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C250	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C251	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C252	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C253	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C254	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C255	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C256	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C257	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C258	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C259	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C260	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C261	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C262	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C263	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C271	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C272	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C501	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C551	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C552	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C553	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C554	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C555	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C556	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C557	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C558	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C559	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C560	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C561	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C562	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C563	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C564	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C565	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C566	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C567	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C568	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C569	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C570	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C571	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C572	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C573	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C574	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C575	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C576	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C577	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
CN501	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN502	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN503	1-566-848-11	s	CONNECTOR, CIRCULAR 4P(S), FEMALE
CN504	1-562-941-41	s	JACK, PIN 1P, FEMALE
CN505	1-566-848-11	s	CONNECTOR, CIRCULAR 4P(S), FEMALE
CN506	1-562-941-41	s	JACK, PIN 1P, FEMALE
E1	1-535-757-11	s	TERMINAL, TP
E2	1-535-757-11	s	TERMINAL, TP
E11	1-535-757-11	s	TERMINAL, TP
E12	1-535-757-11	s	TERMINAL, TP
FL1	1-233-669-21	s	FILTER, BAND PASS
FL2	1-239-290-11	s	FILTER, LOW-PASS
FL3	1-239-290-11	s	FILTER, LOW-PASS
FL6	1-233-501-11	s	FILTER, LOW PASS
FL7	1-233-501-11	s	FILTER, LOW PASS
FL8	1-239-290-11	s	FILTER, LOW-PASS
FL9	1-239-290-11	s	FILTER, LOW-PASS
FL51	1-239-825-11	s	FILTER, CHIP, NOISE
FL52	1-239-825-11	s	FILTER, CHIP, NOISE
FL53	1-239-825-11	s	FILTER, CHIP, NOISE
FL54	1-239-825-11	s	FILTER, CHIP, NOISE
FL55	1-239-825-11	s	FILTER, CHIP, NOISE
FL56	1-239-825-11	s	FILTER, CHIP, NOISE
IC1	8-752-372-78	s	IC CXD2024AQ
IC2	8-752-062-80	s	IC CXA1686M
IC3	8-759-361-86	s	IC MC44011FN
IC4	8-759-361-85	s	IC MC44140DWR2
IC5	8-759-081-44	s	IC TC74VHC04F
IC6	8-759-186-39	s	IC TC74VHC74F
IC7	8-759-186-53	s	IC TC74VHC163F
IC8	8-759-186-53	s	IC TC74VHC163F
IC9	8-759-186-53	s	IC TC74VHC163F
IC10	8-759-239-55	s	IC TC74HC123AF
IC11	8-759-239-58	s	IC TC74HC221AF
IC15	8-759-447-90	s	IC TLC5733AIPM
IC16	8-759-510-71	s	IC UPC358G2-E2
IC17	8-759-925-90	s	IC SN74HC74ANS
IC18	8-752-380-71	s	IC CXD1913Q
IC19	8-752-870-04	s	IC CXP5068H-242Q
IC21	8-759-926-12	s	IC SN74HC139ANS
IC22	8-759-925-74	s	IC TC74HC04ANS
IC31	8-759-701-59	s	IC NJM78M09FA
IC32	8-759-069-28	s	IC PQ05RF11
IC33	8-759-245-82	s	IC TA79009S
IC52	8-759-048-79	s	IC UPD65016GB-041-3B4
IC54	8-759-175-29	s	IC TC74VHC374F
IC55	8-759-174-16	s	IC TC74VHC244F
IC56	8-759-186-39	s	IC TC74VHC74F
IC57	8-759-186-39	s	IC TC74VHC74F
IC58	8-759-186-39	s	IC TC74VHC74F
IC61	8-759-186-51	s	IC TC74VHC157F
IC62	8-759-186-51	s	IC TC74VHC157F
IC64	8-759-185-82	s	IC TC74VHC153F(EL)

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
IC65	8-759-185-82	s	IC TC74VHC153F(EL)
IC66	8-759-185-82	s	IC TC74VHC153F(EL)
IC67	8-759-185-82	s	IC TC74VHC153F(EL)
IC68	8-759-185-82	s	IC TC74VHC153F(EL)
IC69	8-759-185-82	s	IC TC74VHC153F(EL)
IC70	8-759-185-82	s	IC TC74VHC153F(EL)
IC71	8-759-185-82	s	IC TC74VHC153F(EL)
IC72	8-759-186-13	s	IC TC74VHCT374F(EL)
IC73	8-759-186-13	s	IC TC74VHCT374F(EL)
IC74	8-759-269-09	s	IC SN74HCT04ANS
IC75	8-759-174-16	s	IC TC74VHC244F
IC76	8-759-186-51	s	IC TC74VHC157F
IC78	8-759-037-79	s	IC MC74HC163AF
IC79	8-759-186-39	s	IC TC74VHC74F
IC80	8-759-186-39	s	IC TC74VHC74F
IC81	8-759-186-26	s	IC TC74VHC02F
IC83	8-759-374-69	s	IC UPD65641GD-188-5BD
IC84	8-752-365-22	s	IC CXK581000AM-10LL
IC85	8-752-365-22	s	IC CXK581000AM-10LL
IC86	8-759-926-69	s	IC SN74HC377ANS
IC87	8-759-926-18	s	IC SN74HC157ANS
IC88	8-759-186-56	s	IC TC74VHC174F
IC89	8-759-926-67	s	IC SN74HC374ANS
IC90	8-759-099-37	s	IC SN74HCT74ANS-E05
IC91	8-759-272-05	s	IC TC74VHCT244F
IC92	8-759-272-05	s	IC TC74VHCT244F
IC93	8-759-272-05	s	IC TC74VHCT244F
IC94	8-759-272-05	s	IC TC74VHCT244F
IC95	8-759-186-12	s	IC TC74VHCT373F(EL)
IC96	8-759-186-12	s	IC TC74VHCT373F(EL)
IC97	8-759-186-12	s	IC TC74VHCT373F(EL)
IC98	8-759-186-12	s	IC TC74VHCT373F(EL)
IC99	8-759-391-67	o	IC GAL20V8B-25QJ-RAP00V1
IC100	8-759-099-39	s	IC SN74HCT32ANS-E05
IC101	8-759-269-06	s	IC SN74HCT02ANS-E05
IC102	8-759-154-60	s	IC UPD71055GB-10-3B4
IC103	8-759-462-01	o	IC PALCE16V8H-15SC/4/T-RAP07V1
JC2	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC21	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC22	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC23	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
JC24	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
L1	1-408-791-00	s	INDUCTOR, CHIP 150uH
L2	1-408-791-00	s	INDUCTOR, CHIP 150uH
L3	1-408-777-00	s	INDUCTOR, CHIP 10uH
L4	1-408-777-00	s	INDUCTOR, CHIP 10uH
L5	1-408-777-00	s	INDUCTOR, CHIP 10uH
L6	1-408-785-21	s	INDUCTOR, CHIP 47uH
L7	1-408-777-00	s	INDUCTOR, CHIP 10uH
L8	1-408-785-21	s	INDUCTOR, CHIP 47uH
L11	1-408-777-00	s	INDUCTOR, CHIP 10uH
L12	1-408-777-00	s	INDUCTOR, CHIP 10uH
L14	1-408-785-21	s	INDUCTOR, CHIP 47uH
L15	1-408-785-21	s	INDUCTOR, CHIP 47uH
L16	1-408-777-00	s	INDUCTOR, CHIP 10uH
L17	1-408-785-21	s	INDUCTOR, CHIP 47uH
Q1	8-729-117-32	s	TRANSISTOR 2SC4177
Q2	8-729-117-32	s	TRANSISTOR 2SC4177

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
Q3	8-729-117-32	s	TRANSISTOR 2SC4177
Q4	8-729-117-32	s	TRANSISTOR 2SC4177
Q5	8-729-117-32	s	TRANSISTOR 2SC4177
Q6	8-729-117-32	s	TRANSISTOR 2SC4177
Q7	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q8	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q9	8-729-117-32	s	TRANSISTOR 2SC4177
Q10	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q11	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q12	8-729-117-32	s	TRANSISTOR 2SC4177
Q13	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q14	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q15	8-729-117-32	s	TRANSISTOR 2SC4177
Q16	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q17	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q18	8-729-117-32	s	TRANSISTOR 2SC4177
Q19	8-729-117-32	s	TRANSISTOR 2SC4177
Q20	8-729-117-32	s	TRANSISTOR 2SC4177
Q21	8-729-117-32	s	TRANSISTOR 2SC4177
Q22	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q23	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q24	8-729-117-32	s	TRANSISTOR 2SC4177
Q25	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q26	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q27	8-729-117-32	s	TRANSISTOR 2SC4177
Q28	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q29	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q30	8-729-117-32	s	TRANSISTOR 2SC4177
Q31	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q32	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q33	8-729-117-32	s	TRANSISTOR 2SC4177
Q34	8-729-117-32	s	TRANSISTOR 2SC4177
Q35	8-729-117-32	s	TRANSISTOR 2SC4177
Q36	8-729-117-32	s	TRANSISTOR 2SC4177
Q41	8-729-117-32	s	TRANSISTOR 2SC4177
Q42	8-729-117-32	s	TRANSISTOR 2SC4177
Q43	8-729-117-32	s	TRANSISTOR 2SC4177
Q44	8-729-117-32	s	TRANSISTOR 2SC4177
Q45	8-729-117-32	s	TRANSISTOR 2SC4177
Q46	8-729-117-32	s	TRANSISTOR 2SC4177
Q47	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q48	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q49	8-729-117-32	s	TRANSISTOR 2SC4177
Q51	8-729-117-32	s	TRANSISTOR 2SC4177
Q52	8-729-117-32	s	TRANSISTOR 2SC4177
Q55	8-729-117-32	s	TRANSISTOR 2SC4177
Q56	8-729-117-32	s	TRANSISTOR 2SC4177
Q57	8-729-117-32	s	TRANSISTOR 2SC4177
Q61	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q62	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q63	8-729-117-32	s	TRANSISTOR 2SC4177
Q64	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q71	8-729-117-32	s	TRANSISTOR 2SC4177
Q72	8-729-117-32	s	TRANSISTOR 2SC4177
Q75	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q77	8-729-117-32	s	TRANSISTOR 2SC4177
Q81	8-729-117-32	s	TRANSISTOR 2SC4177
Q82	8-729-117-32	s	TRANSISTOR 2SC4177
Q84	8-729-117-32	s	TRANSISTOR 2SC4177

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
Q85	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q86	8-729-117-32	s	TRANSISTOR 2SC4177
Q87	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q90	8-729-117-32	s	TRANSISTOR 2SC4177
Q91	8-729-117-32	s	TRANSISTOR 2SC4177
Q92	8-729-117-32	s	TRANSISTOR 2SC4177
Q93	8-729-117-32	s	TRANSISTOR 2SC4177
Q94	8-729-117-32	s	TRANSISTOR 2SC4177
Q95	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q96	8-729-117-32	s	TRANSISTOR 2SC4177
Q97	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q98	8-729-117-32	s	TRANSISTOR 2SC4177
Q99	8-729-117-32	s	TRANSISTOR 2SC4177
Q100	8-729-117-32	s	TRANSISTOR 2SC4177
Q101	8-729-117-32	s	TRANSISTOR 2SC4177
Q102	8-729-117-32	s	TRANSISTOR 2SC4177
Q103	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q104	8-729-117-32	s	TRANSISTOR 2SC4177
Q105	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q106	8-729-117-32	s	TRANSISTOR 2SC4177
Q107	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q108	8-729-117-32	s	TRANSISTOR 2SC4177
Q111	8-729-117-32	s	TRANSISTOR 2SC4177
Q112	8-729-117-32	s	TRANSISTOR 2SC4177
Q113	8-729-117-32	s	TRANSISTOR 2SC4177
Q114	8-729-117-32	s	TRANSISTOR 2SC4177
Q115	8-729-117-32	s	TRANSISTOR 2SC4177
Q116	8-729-117-32	s	TRANSISTOR 2SC4177
Q117	8-729-117-32	s	TRANSISTOR 2SC4177
Q118	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q119	8-729-117-32	s	TRANSISTOR 2SC4177
Q120	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q121	8-729-117-32	s	TRANSISTOR 2SC4177
Q122	8-729-117-32	s	TRANSISTOR 2SC4177
Q123	8-729-117-32	s	TRANSISTOR 2SC4177
Q124	8-729-117-32	s	TRANSISTOR 2SC4177
Q125	8-729-117-32	s	TRANSISTOR 2SC4177
Q126	8-729-117-32	s	TRANSISTOR 2SC4177
Q127	8-729-117-32	s	TRANSISTOR 2SC4177
Q128	8-729-117-32	s	TRANSISTOR 2SC4177
Q129	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q130	8-729-117-32	s	TRANSISTOR 2SC4177
Q131	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q132	8-729-117-32	s	TRANSISTOR 2SC4177
Q133	8-729-117-32	s	TRANSISTOR 2SC4177
Q134	8-729-117-32	s	TRANSISTOR 2SC4177
Q135	8-729-117-32	s	TRANSISTOR 2SC4177
Q136	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q137	8-729-117-32	s	TRANSISTOR 2SC4177
Q138	8-729-140-63	s	TRANSISTOR 2SA1611-M5M6
Q501	8-729-117-32	s	TRANSISTOR 2SC4177
R1	1-218-665-11	s	METAL 75 0.50% 1/16W
R2	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R3	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R4	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R5	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R6	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R7	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R8	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R9	1-218-665-11	s	METAL 75 0.50% 1/16W
R10	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R11	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R12	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R13	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R14	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R15	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W
R16	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R17	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R18	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R19	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R20	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R21	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R22	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R23	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R24	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R25	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R26	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R27	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R28	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R29	1-218-665-11	s	METAL 75 0.50% 1/16W
R30	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R31	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R32	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R33	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R34	1-218-665-11	s	METAL 75 0.50% 1/16W
R35	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R36	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R37	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R38	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R39	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R40	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R41	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R42	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R44	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R45	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R47	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R48	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R49	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R50	1-216-826-11	s	METAL, CHIP 2.7k 5% 1/16W
R51	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R52	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R53	1-218-692-11	s	METAL 1k 0.50% 1/16W
R54	1-218-692-11	s	METAL 1k 0.50% 1/16W
R55	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R56	1-216-816-11	s	METAL, CHIP 390 5% 1/16W
R57	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R58	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R59	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R61	1-218-665-11	s	METAL 75 0.50% 1/16W
R62	1-216-843-11	s	METAL, CHIP 68k 5% 1/16W
R63	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R64	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R65	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R66	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R67	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R68	1-218-692-11	s	METAL 1k 0.50% 1/16W
R69	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R70	1-218-692-11	s	METAL 1k 0.50% 1/16W
R71	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R72	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R73	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R74	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R75	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R76	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R77	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R78	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R79	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R80	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R81	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R82	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R83	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R84	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R85	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R86	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R87	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R88	1-216-848-11	s	METAL, CHIP 180k 5% 1/16W
R89	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R90	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R91	1-218-703-11	s	METAL 3k 0.50% 1/16W
R92	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R93	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R94	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R95	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R97	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R98	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R99	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R100	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R101	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R102	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R103	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R104	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R105	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R106	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R112	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R113	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R114	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R115	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R116	1-216-851-11	s	METAL, CHIP 330k 5% 1/16W
R117	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R121	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R122	1-219-570-11	s	METAL 10M 5% 1/16W
R123	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R124	1-219-570-11	s	METAL 10M 5% 1/16W
R125	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R126	1-218-741-11	s	METAL, CHIP 110k 0.5% 1/16W
R128	1-216-834-11	s	METAL, CHIP 12k 5% 1/16W
R129	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R130	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R131	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R132	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R133	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R134	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R135	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R136	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R137	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R138	1-216-797-11	s	METAL, CHIP 10 5% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R139	1-216-843-11	s	METAL, CHIP 68k 5% 1/16W
R140	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R141	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R142	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R143	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R144	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R145	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R146	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R147	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R148	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R149	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R150	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R151	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R152	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R153	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R154	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R155	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R156	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R161	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R162	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R163	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R164	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R165	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R166	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R167	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R174	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R176	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R177	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R178	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R179	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R180	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R181	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R182	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R185	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R186	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R187	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R188	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R193	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R194	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R195	1-218-686-11	s	METAL 560 0.50% 1/16W
R196	1-218-686-11	s	METAL 560 0.50% 1/16W
R197	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R198	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R199	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R200	1-216-814-11	s	METAL, CHIP 270 5% 1/16W
R201	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R202	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R203	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R204	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R205	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R206	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R207	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R208	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R209	1-218-686-11	s	METAL 560 0.50% 1/16W
R210	1-218-686-11	s	METAL 560 0.50% 1/16W
R211	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R212	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R213	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R214	1-216-814-11	s	METAL, CHIP 270 5% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R215	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R216	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R217	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R218	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R219	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R220	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R223	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R224	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R225	1-216-822-11	s	METAL, CHIP 1.2k 5% 1/16W
R226	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R227	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R228	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R229	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R232	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R233	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R241	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R242	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R243	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R244	1-218-700-11	s	METAL 2.2k 0.50% 1/16W
R245	1-218-704-11	s	METAL, CHIP 3.3k 0.50% 1/16W
R246	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R247	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R248	1-218-675-11	s	METAL, CHIP 200 0.50% 1/16W
R249	1-216-826-11	s	METAL, CHIP 2.7k 5% 1/16W
R250	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R251	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R253	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R254	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R255	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R256	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R257	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R258	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R259	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R260	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R261	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R264	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R265	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R271	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R272	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R273	1-218-692-11	s	METAL 1k 0.50% 1/16W
R274	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R275	1-218-692-11	s	METAL 1k 0.50% 1/16W
R276	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R277	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R278	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R279	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R280	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R281	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R282	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R283	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R284	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R285	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R286	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R287	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R288	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R289	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R290	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R291	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R292	1-218-664-11	s	METAL 68 0.50% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R293	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R294	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R295	1-218-692-11	s	METAL 1k 0.50% 1/16W
R296	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R297	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R298	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R299	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R300	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R301	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R302	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R303	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R304	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R305	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R306	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R307	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R308	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R309	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R310	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R311	1-218-664-11	s	METAL 68 0.50% 1/16W
R312	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R313	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R314	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R315	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R316	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R317	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R318	1-216-823-11	s	METAL, CHIP 1.5k 5% 1/16W
R319	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R320	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R321	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R322	1-216-839-11	s	METAL, CHIP 33k 5% 1/16W
R323	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R324	1-216-827-11	s	METAL, CHIP 3.3k 5% 1/16W
R325	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R326	1-216-789-11	s	METAL, CHIP 2.2 5% 1/16W
R327	1-218-664-11	s	METAL 68 0.50% 1/16W
R341	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R342	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R344	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R345	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R350	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R501	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R502	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R503	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R504	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R505	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R506	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R508	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R509	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R511	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R512	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R513	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R514	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R515	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R516	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R517	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R518	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R519	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R521	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R522	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R523	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R524	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R525	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R526	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R527	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R528	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R529	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R530	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R531	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R532	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R534	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R535	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R537	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
RB1	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
RB2	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
RB3	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB4	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB7	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB8	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB9	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB10	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB11	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB15	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB16	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB21	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB22	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB23	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB24	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB25	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB26	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB27	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB28	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB29	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB30	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB31	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB32	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB33	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RB34	1-239-426-11	s	RESISTOR BLOCK, CHIP 2.2kx4
RV1	1-238-853-11	s	RES, ADJ, CERMET 1k
RV2	1-238-853-11	s	RES, ADJ, CERMET 1k
RV4	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV5	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV6	1-238-854-11	s	RES, ADJ, CERMET 2.2k
RV7	1-238-853-11	s	RES, ADJ, CERMET 1k
RV8	1-238-853-11	s	RES, ADJ, CERMET 1k
RV9	1-238-853-11	s	RES, ADJ, CERMET 1k
RV10	1-238-853-11	s	RES, ADJ, CERMET 1k
S1	1-572-658-21	s	SWITCH, ROTARY
THP1	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP2	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP3	1-810-106-11	s	THERMISTOR, POSITIVE 1k
THP4	1-810-106-11	s	THERMISTOR, POSITIVE 1k
TP2	1-535-757-11	s	TERMINAL, TP
TP3	1-535-757-11	s	TERMINAL, TP
TP5	1-535-757-11	s	TERMINAL, TP
TP6	1-535-757-11	s	TERMINAL, TP
TP7	1-535-757-11	s	TERMINAL, TP

(DAD-31P BOARD (PCS-P300P))

Ref. No. or Q'ty	Part No.	SP	Description
TP8	1-535-757-11	s	TERMINAL, TP
TP9	1-535-757-11	s	TERMINAL, TP
TP11	1-535-757-11	s	TERMINAL, TP
TP12	1-535-757-11	s	TERMINAL, TP
TP13	1-535-757-11	s	TERMINAL, TP
TP14	1-535-757-11	s	TERMINAL, TP
TP15	1-535-757-11	s	TERMINAL, TP
TP16	1-535-757-11	s	TERMINAL, TP
TP17	1-535-757-11	s	TERMINAL, TP
TP18	1-535-757-11	s	TERMINAL, TP
TP19	1-535-757-11	s	TERMINAL, TP
TP20	1-535-757-11	s	TERMINAL, TP
TP21	1-535-757-11	s	TERMINAL, TP
TP22	1-535-757-11	s	TERMINAL, TP
TP23	1-535-757-11	s	TERMINAL, TP
TP24	1-535-757-11	s	TERMINAL, TP
X1	1-577-611-11	s	RESONATOR, CERAMIC 500kHz
X3	1-760-457-11	s	CRYSTAL 17.734475MHz
X4	1-760-457-11	s	CRYSTAL 17.734475MHz
X6	1-760-275-11	s	VCO, CRYSTAL 27.00MHz
X7	1-579-063-21	s	RESONATOR, CERAMIC 4.19MHz

DPR-97 BOARD (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-193-A	o	MOUNTED CIRCUIT BOARD, DPR-97
1pc	3-179-084-01	s	LEVER (R), PC BOARD
1pc	3-179-085-01	s	LEVER (L), PC BOARD
2pcs	7-682-947-01	s	SCREW +PSW 3x6
C100	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C103	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C104	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C105	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C106	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C108	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C109	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C110	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C111	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C112	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C114	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C200	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C203	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C204	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C206	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C207	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C210	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C212	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C213	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C214	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C215	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C216	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C217	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C218	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C219	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C230	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C231	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C232	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C233	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C234	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C235	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C236	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C237	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C238	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C239	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C251	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C252	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C253	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C254	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C255	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C256	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C257	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C258	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C259	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C260	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C261	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C262	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C300	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C301	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C302	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C303	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C304	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C305	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C306	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C307	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C309	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C310	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C311	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C312	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C313	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C314	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C315	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C316	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C317	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C318	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C319	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C320	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C321	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C322	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C323	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C324	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C325	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C326	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C327	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C328	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C329	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C330	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C331	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C332	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C333	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C334	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C335	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C336	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C337	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C338	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C339	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C340	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C341	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C342	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C343	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C344	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C345	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C346	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C347	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C348	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C349	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C350	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C354	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C357	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C358	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C359	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C370	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C371	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C372	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C373	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C375	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C376	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C400	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C401	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C402	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C403	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C404	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C405	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C406	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C407	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C408	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C409	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C410	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C411	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C412	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C413	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C416	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C417	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C418	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C419	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C420	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C421	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C422	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C423	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C424	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C425	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C426	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C427	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C428	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C429	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C430	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C431	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C432	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C433	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C434	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C435	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C436	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C437	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C438	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C439	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C440	1-104-913-11	s	TANTAL 10uF 20% 16V
C441	1-126-405-11	s	ELECT, CHIP 10uF 20% 50V
C442	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C443	1-104-913-11	s	TANTAL 10uF 20% 16V
C445	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C446	1-164-217-11	s	CERAMIC, CHIP 150pF 5% 50V
C447	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C448	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C449	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C450	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C451	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C452	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C453	1-164-245-11	s	CERAMIC, CHIP 0.015uF 10% 25V
C454	1-110-563-11	s	CERAMIC 0.068uF 10% 16V
C455	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C456	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C457	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C458	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C459	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C460	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C461	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C462	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C463	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C464	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C465	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C466	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C467	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C468	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C469	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C470	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C471	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C472	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C473	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C474	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C475	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C476	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C477	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C478	1-164-245-11	s	CERAMIC, CHIP 0.015uF 10% 25V
C479	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C480	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C481	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C482	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C483	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C484	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C485	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C486	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C487	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C489	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C490	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C491	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C492	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C493	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C494	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C495	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C496	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C497	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C498	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C499	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C500	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C501	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C502	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C503	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C504	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C505	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C506	1-164-245-11	s	CERAMIC, CHIP 0.015uF 10% 25V
C507	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C508	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C509	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C510	1-162-963-11	s	CERAMIC, CHIP 680pF 10% 50V
C511	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C512	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C513	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C514	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C515	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C516	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C517	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C518	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C519	1-164-217-11	s	CERAMIC, CHIP 150pF 5% 50V
C520	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C521	1-164-245-11	s	CERAMIC, CHIP 0.015uF 10% 25V
C522	1-110-563-11	s	CERAMIC 0.068uF 10% 16V

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
C523	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C524	1-126-393-11	s	ELECT, CHIP 33uF 20% 10V
C525	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C526	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C527	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C528	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C529	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C530	1-162-959-11	s	CERAMIC, CHIP 330pF 5% 50V
C531	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
CN401	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN402	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN403	1-562-941-11	s	JACK, PIN 1P, FEMALE
CN404	1-562-941-11	s	JACK, PIN 1P, FEMALE
CN405	1-566-740-11	s	JACK, PIN 1P, FEMALE
CN406	1-566-740-11	s	JACK, PIN 1P, FEMALE
D330	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D331	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D332	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D333	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D334	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D335	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D336	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D337	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D338	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D339	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D340	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D341	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D342	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D343	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D344	8-719-987-43	s	TRANSISTOR CL-150PG-CD
D345	8-719-989-22	s	DIODE CL-150R-CD
D401	8-719-800-76	s	DIODE 1SS226
D402	8-719-800-76	s	DIODE 1SS226
D403	8-719-800-76	s	DIODE 1SS226
D404	8-719-800-76	s	DIODE 1SS226
D405	8-719-800-76	s	DIODE 1SS226
D406	8-719-800-76	s	DIODE 1SS226
D407	8-719-800-76	s	DIODE 1SS226
D408	8-719-158-35	s	DIODE RD9.1SB
D409	8-719-158-35	s	DIODE RD9.1SB
D410	8-719-158-35	s	DIODE RD9.1SB
D411	8-719-158-35	s	DIODE RD9.1SB
D412	8-719-158-35	s	DIODE RD9.1SB
D413	8-719-158-35	s	DIODE RD9.1SB
D414	8-719-158-35	s	DIODE RD9.1SB
D415	8-719-158-35	s	DIODE RD9.1SB
D416	8-719-158-35	s	DIODE RD9.1SB
D417	8-719-158-35	s	DIODE RD9.1SB
D418	8-719-158-35	s	DIODE RD9.1SB
D419	8-719-158-35	s	DIODE RD9.1SB
E101	1-535-757-11	s	TERMINAL, TP
E201	1-535-757-11	s	TERMINAL, TP
E301	1-535-757-11	s	TERMINAL, TP
E401	1-535-757-11	s	TERMINAL, TP
E402	1-535-757-11	s	TERMINAL, TP
FL400	1-239-825-11	s	FILTER, CHIP, NOISE
FL401	1-239-825-11	s	FILTER, CHIP, NOISE
FL402	1-239-825-11	s	FILTER, CHIP, NOISE

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
FL403	1-239-825-11	s	FILTER, CHIP, NOISE
IC100	8-759-462-26	o	IC PLSI2032-80LJ-RAP05V2
IC101	8-759-452-05	s	IC PI74FCT162Q245ATAX
IC102	8-759-272-21	s	IC TC74VHCT541F
IC103	8-759-451-89	s	IC IDT74FCT157ATQ-TL
IC104	8-759-272-21	s	IC TC74VHCT541F
IC105	8-759-186-13	s	IC TC74VHCT374F(EL)
IC106	8-759-185-61	s	IC TC74VHCT00F(EL)
IC200	8-759-361-35	s	IC IIT3104AKAB
IC201	8-759-436-45	s	IC IDT71024S15Y-TL
IC202	8-759-436-45	s	IC IDT71024S15Y-TL
IC203	8-759-436-45	s	IC IDT71024S15Y-TL
IC204	8-759-436-45	s	IC IDT71024S15Y-TL
IC205	8-759-451-79	s	IC KM416C1200AT-6T
IC206	8-759-451-79	s	IC KM416C1200AT-6T
IC207	8-759-927-18	s	IC SN74HCT541NS
IC251	8-759-174-16	s	IC TC74VHC244F
IC252	8-759-175-29	s	IC TC74VHC374F
IC253	8-759-175-29	s	IC TC74VHC374F
IC254	8-759-175-29	s	IC TC74VHC374F
IC255	8-759-186-39	s	IC TC74VHC74F
IC256	8-759-186-56	s	IC TC74VHC174F
IC257	8-759-268-95	s	IC SN74HCT00ANS-E05
IC258	8-759-099-38	s	IC SN74HCT374ANS-E05
IC259	8-759-099-38	s	IC SN74HCT374ANS-E05
IC260	8-759-186-13	s	IC TC74VHCT374F(EL)
IC261	8-759-186-13	s	IC TC74VHCT374F(EL)
IC262	8-759-174-16	s	IC TC74VHC244F
IC300	8-759-451-78	s	IC RH5RE33AA-T1
IC301	8-759-451-78	s	IC RH5RE33AA-T1
IC302	8-759-392-79	s	IC SN74LVC245APW-E05
IC303	8-759-451-76	s	IC SN74LVC244APW-E05
IC304	8-759-451-76	s	IC SN74LVC244APW-E05
IC305	8-759-451-76	s	IC SN74LVC244APW-E05
IC310	8-759-386-89	s	IC UPD77017GC-030-9EU
IC311	8-752-366-07	s	IC CXK5V8257BTM-10LL
IC320	8-759-441-78	s	IC UPD77017GC-047-9EU
IC321	8-752-366-07	s	IC CXK5V8257BTM-10LL
IC330	8-759-367-38	s	IC UPD77016GM-KMD
IC331	8-759-254-78	s	IC CY7C185-25VCTEL
IC332	8-759-254-78	s	IC CY7C185-25VCTEL
IC333	8-759-390-16	o	IC PALCE16V8-15JC-RAP02V3
IC334	8-759-272-21	s	IC TC74VHCT541F
IC335	8-759-927-23	s	IC SN74HCT574NS
IC336	8-759-927-23	s	IC SN74HCT574NS
IC337	8-759-099-37	s	IC SN74HCT74ANS-E05
IC354	8-759-927-18	s	IC SN74HCT541NS
IC370	8-759-425-15	o	IC PLSI2032-80LJ-RAP02V5
IC371	8-759-080-91	s	IC MM74HC4046M
IC372	8-759-099-37	s	IC SN74HCT74ANS-E05
IC373	8-759-927-18	s	IC SN74HCT541NS
IC400	8-752-357-64	s	IC CXD2570Q
IC401	8-759-973-71	s	IC TL7705CPS-B
IC402	8-759-323-82	s	IC HA178L05UA-TL
IC403	8-759-323-82	s	IC HA178L05UA-TL
IC404	8-759-372-29	s	IC HA178L09UA-TL
IC405	8-759-372-30	s	IC HA179L09U-TL
IC406	8-759-372-29	s	IC HA178L09UA-TL

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
IC407	8-759-372-30	s	IC HA179L09U-TL
IC408	8-759-141-05	s	IC UPC4574G2
IC409	8-759-141-05	s	IC UPC4574G2
IC410	8-759-141-05	s	IC UPC4574G2
IC411	8-759-141-05	s	IC UPC4574G2
IC412	8-759-141-05	s	IC UPC4574G2
IC413	8-759-141-05	s	IC UPC4574G2
L401	1-410-389-31	s	INDUCTOR CHIP 47uH
Q100	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q300	8-729-101-07	s	TRANSISTOR 2SB798
Q301	8-729-101-07	s	TRANSISTOR 2SB798
Q402	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q403	8-729-141-48	s	TRANSISTOR 2SB624-BV345
Q404	8-729-141-48	s	TRANSISTOR 2SB624-BV345
Q405	8-729-141-48	s	TRANSISTOR 2SB624-BV345
Q406	8-729-216-22	s	TRANSISTOR 2SA1162
Q407	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q408	8-729-216-22	s	TRANSISTOR 2SA1162
Q409	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
R100	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R101	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R102	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R103	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R106	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R107	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R109	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R110	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R111	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R112	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R113	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R114	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R200	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R201	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R202	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R203	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R204	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R205	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R206	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R250	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R251	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R252	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R253	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R257	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R258	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R259	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R260	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R261	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R262	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R263	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R264	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R266	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R267	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R269	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R270	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R272	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R273	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R300	1-216-809-11	s	METAL, CHIP 100 5% 1/16W

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R301	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R302	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R310	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R311	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R312	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R313	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R320	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R321	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R330	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R331	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R332	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R333	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R334	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R335	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R336	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R350	1-216-841-11	s	METAL, CHIP 47k 5% 1/16W
R351	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R370	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R372	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R373	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R374	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R375	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R376	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R377	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R378	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R379	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R402	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R403	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R404	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R405	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R406	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R407	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R408	1-216-814-11	s	METAL, CHIP 270 5% 1/16W
R409	1-216-842-11	s	METAL, CHIP 56k 5% 1/16W
R410	1-216-838-11	s	METAL, CHIP 27k 5% 1/16W
R411	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R412	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R413	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R414	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R415	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R416	1-216-835-11	s	METAL, CHIP 15k 5% 1/16W
R417	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R418	1-216-814-11	s	METAL, CHIP 270 5% 1/16W
R419	1-216-849-11	s	METAL, CHIP 220k 5% 1/16W
R420	1-216-846-11	s	METAL, CHIP 120k 5% 1/16W
R421	1-216-846-11	s	METAL, CHIP 120k 5% 1/16W
R422	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R423	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R424	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R425	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R426	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R427	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R428	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R429	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R430	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R431	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R432	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R433	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R434	1-216-820-11	s	METAL, CHIP 820 5% 1/16W

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R435	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R436	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R437	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R438	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R439	1-216-836-11	s	METAL, CHIP 18k 5% 1/16W
R440	1-216-853-11	s	METAL, CHIP 470k 5% 1/16W
R441	1-216-853-11	s	METAL, CHIP 470k 5% 1/16W
R442	1-216-849-11	s	METAL, CHIP 220k 5% 1/16W
R443	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R444	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R445	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W
R446	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R447	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W
R448	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R449	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R450	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R451	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R452	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R453	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R454	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R455	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R456	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R457	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R458	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R459	1-218-743-11	s	METAL 130k 0.50% 1/16W
R460	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R461	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R462	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R463	1-218-743-11	s	METAL 130k 0.50% 1/16W
R464	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R465	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R466	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R467	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R468	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R469	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R470	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R471	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R472	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R473	1-216-849-11	s	METAL, CHIP 220k 5% 1/16W
R474	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R475	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R476	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R477	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R478	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W
R479	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R480	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R481	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W
R482	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R483	1-216-849-11	s	METAL, CHIP 220k 5% 1/16W
R484	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R485	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R486	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R487	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R488	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R489	1-216-818-11	s	METAL, CHIP 560 5% 1/16W
R490	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R491	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W
R492	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R493	1-216-832-11	s	METAL, CHIP 8.2k 5% 1/16W

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R494	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R495	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R496	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R497	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R498	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R499	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R500	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R501	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R502	1-216-830-11	s	METAL, CHIP 5.6k 5% 1/16W
R503	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R504	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R505	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R506	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R507	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R508	1-218-743-11	s	METAL 130k 0.50% 1/16W
R509	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R510	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R511	1-218-743-11	s	METAL 130k 0.50% 1/16W
R512	1-216-828-11	s	METAL, CHIP 3.9k 5% 1/16W
R513	1-216-849-11	s	METAL, CHIP 220k 5% 1/16W
R514	1-216-846-11	s	METAL, CHIP 120k 5% 1/16W
R515	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R516	1-216-837-11	s	METAL, CHIP 22k 5% 1/16W
R517	1-216-846-11	s	METAL, CHIP 120k 5% 1/16W
R518	1-216-831-11	s	METAL, CHIP 6.8k 5% 1/16W
R519	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R520	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R521	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R522	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R523	1-216-836-11	s	METAL, CHIP 18k 5% 1/16W
R524	1-216-853-11	s	METAL, CHIP 470k 5% 1/16W
R525	1-216-853-11	s	METAL, CHIP 470k 5% 1/16W
R526	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R529	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R530	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R531	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R542	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
RB100	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB101	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB102	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB103	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB200	1-236-907-11	s	RESISTOR BLOCk, CHIP 100kx4
RB201	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB202	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB203	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB204	1-239-621-11	s	RESISTOR BLOCK, CHIP 22x4
RB205	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB250	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB251	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB252	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB253	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB254	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB255	1-239-412-11	s	RESISTOR BLOCk, CHIP 100x4
RB256	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB257	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB258	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB300	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB301	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4

(DPR-97 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
RB310	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB311	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB312	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB313	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB314	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB320	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB321	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB322	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB323	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB324	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB325	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB330	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB331	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB332	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB333	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB334	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB335	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB336	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB337	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB338	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB339	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB340	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB341	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB400	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB401	1-239-412-11	s	RESISTOR BLOCK, CHIP 100x4
RB402	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RV401	1-238-857-11	s	RES, ADJ, CERMET 22k
RV402	1-238-857-11	s	RES, ADJ, CERMET 22k
RV403	1-238-857-11	s	RES, ADJ, CERMET 22k
RV404	1-238-857-11	s	RES, ADJ, CERMET 22k
S330	1-692-271-31	s	SWITCH, SLIDE
TP401	1-535-757-11	s	TERMINAL, TP
TP402	1-535-757-11	s	TERMINAL, TP
TP403	1-535-757-11	s	TERMINAL, TP
TP404	1-535-757-11	s	TERMINAL, TP
X200	1-760-967-21	s	VCO, CRYSTAL 33.00MHz
X300	1-760-996-21	s	VCO, CRYSTAL 4.125MHz
X330	1-760-966-21	s	VCO, CRYSTAL 66.6666MHz

IF-664 BOARD (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-192-A	o	MOUNTED CIRCUIT BOARD, IF-664
1pc	3-179-084-01	s	LEVER (R), PC BOARD
1pc	3-179-085-01	s	LEVER (L), PC BOARD
5pcs	7-682-947-01	s	SCREW +PSW 3x6
C100	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C103	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C104	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C105	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C200	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C203	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C204	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C206	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C207	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C208	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C209	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C210	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C212	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C213	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C215	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C216	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C220	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C300	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C301	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C302	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C303	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C304	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C305	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C306	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C307	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C308	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C309	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C310	1-162-921-11	s	CERAMIC, CHIP 33pF 5% 50V
C311	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C312	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C313	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C314	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C315	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C316	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C317	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
C318	1-162-919-11	s	CERAMIC, CHIP 22pF 5% 50V
CN301	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN302	1-774-777-21	s	CONNECTOR, BB 40P, FEMALE
CN303	1-750-944-11	s	JACK, MODULAR 8P-8C, FEMALE
CNI201	1-540-151-21	s	SOCKET, IC 32P
D200	8-719-800-76	s	DIODE 1SS226
D201	8-719-800-76	s	DIODE 1SS226
D202	8-719-800-76	s	DIODE 1SS226
D203	8-719-800-76	s	DIODE 1SS226
D204	8-719-800-76	s	DIODE 1SS226
D205	8-719-800-76	s	DIODE 1SS226
D206	8-719-800-76	s	DIODE 1SS226

(IF-664 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
D207	8-719-800-76	s	DIODE 1SS226
D208	8-719-800-76	s	DIODE 1SS226
D209	8-719-800-76	s	DIODE 1SS226
D210	8-719-800-76	s	DIODE 1SS226
D211	8-719-800-76	s	DIODE 1SS226
D300	8-719-104-34	s	DIODE 1S2835
D301	8-719-801-78	s	DIODE 1S1837
D302	8-719-104-34	s	DIODE 1S2835
E101	1-535-757-11	s	TERMINAL, TP
E201	1-535-757-11	s	TERMINAL, TP
E301	1-535-757-11	s	TERMINAL, TP
IC100	8-759-461-98	o	IC PALCE16V8H-15SC/4/T-RAP04V1
IC101	8-759-186-02	s	IC TC74VHCT245F(EL)
IC102	8-759-272-21	s	IC TC74VHCT541F
IC103	8-759-272-05	s	IC TC74VHCT244F
IC200	8-759-396-70	s	IC HD81504RFE
IC201	8-759-460-55	o	IC CY27C256-120JC-BRIV2.1
IC202	8-759-361-90	s	IC CY6264-70SC-T2
IC203	8-759-269-12	s	IC SN74HCT08ANS
IC204	8-759-099-37	s	IC SN74HCT74ANS-E05
IC205	8-759-099-37	s	IC SN74HCT74ANS-E05
IC206	8-759-185-80	s	IC TC74VHCT138F(EL)
IC207	8-759-973-71	s	IC TL7705CPS-B
IC300	8-759-374-17	s	IC UPD65646GJ-171-3EB
IC301	8-759-374-19	s	IC UPD17216GT-560
IC302	8-759-269-09	s	IC SN74HCT04ANS
IC303	8-759-185-61	s	IC TC74VHCT00F(EL)
IC304	8-759-451-89	s	IC IDT74FCT157ATQ-TL
IC305	8-759-451-89	s	IC IDT74FCT157ATQ-TL
IC306	8-759-272-21	s	IC TC74VHCT541F
IC307	8-759-272-21	s	IC TC74VHCT541F
IC308	8-759-272-21	s	IC TC74VHCT541F
L201	1-408-777-00	s	INDUCTOR, CHIP 10uH
LF201 ⚠	1-239-773-11	s	CHOKE, NOISE, COMMON-MODE
R200	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R201	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R202	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R203	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R204	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R205	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R206	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R207	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R208	1-218-644-11	s	METAL 10 0.50% 1/16W
R209	1-218-654-11	s	METAL 27 0.50% 1/16W
R210	1-218-644-11	s	METAL 10 0.50% 1/16W
R211	1-218-654-11	s	METAL 27 0.50% 1/16W
R212	1-218-701-11	s	METAL, CHIP 2.4k 0.50% 1/16W
R213	1-218-701-11	s	METAL, CHIP 2.4k 0.50% 1/16W
R214	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R215	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R300 ⚠	1-218-233-11	s	METAL 47 5% 1/2W
R301	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R302	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R303	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R304	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R305	1-216-805-11	s	METAL, CHIP 47 5% 1/16W

(IF-664 BOARD (PCS-P300/P300P))

Ref. No. or Q'ty	Part No.	SP	Description
R306	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R307	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R308	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R309	1-216-801-11	s	METAL, CHIP 22 5% 1/16W
R310	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R311	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R312	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R313	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R314	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R315	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R316	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R317	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R318	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
RB100	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB101	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB102	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB200	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB201	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB202	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB203	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB204	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB205	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB206	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB207	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB208	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB300	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
RB301	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB302	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
T201 ⚠	1-429-630-11	s	TRANSFORMER, INPUT/OUTPUT
T202 ⚠	1-429-630-11	s	TRANSFORMER, INPUT/OUTPUT
X300	1-760-557-11	o	CRYSTAL 12.288MHz
X301	1-579-477-21	s	CRYSTAL 4.00MHz

IF-664A BOARD (PCS-I300)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	3-179-084-01	s	LEVER (R), PC BOARD
1pc	3-179-085-01	s	LEVER (L), PC BOARD
5pcs	7-682-947-01	s	SCREW +PSW 3x6
C100	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C101	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C102	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C103	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C104	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C105	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C200	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C201	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C202	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C203	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C204	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C206	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C207	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C208	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C209	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C210	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C211	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C212	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C213	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C215	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C216	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C220	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C400	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
CN301	1-580-195-21	s	CONNECTOR, PHEC 100P, FEMALE
CN302	1-774-777-21	s	CONNECTOR, BB 40P, FEMALE
CN303	1-750-944-11	s	JACK, MODULAR 8P-8C, FEMALE
CNI201	1-540-151-21	s	SOCKET, IC 32P
D200	8-719-800-76	s	DIODE 1SS226
D201	8-719-800-76	s	DIODE 1SS226
D202	8-719-800-76	s	DIODE 1SS226
D203	8-719-800-76	s	DIODE 1SS226
D204	8-719-800-76	s	DIODE 1SS226
D205	8-719-800-76	s	DIODE 1SS226
D206	8-719-800-76	s	DIODE 1SS226
D207	8-719-800-76	s	DIODE 1SS226
D208	8-719-800-76	s	DIODE 1SS226
D209	8-719-800-76	s	DIODE 1SS226
D210	8-719-800-76	s	DIODE 1SS226
D211	8-719-800-76	s	DIODE 1SS226
E101	1-535-757-11	s	TERMINAL, TP
E201	1-535-757-11	s	TERMINAL, TP
IC100	8-759-461-98	o	IC PALCE16V8H-15SC/4/T-RAP04V1
IC101	8-759-186-02	s	IC TC74VHCT245F(EL)
IC102	8-759-272-21	s	IC TC74VHCT541F
IC103	8-759-272-05	s	IC TC74VHCT244F
IC200	8-759-396-70	s	IC HD81504RFE
IC201	8-759-460-55	o	IC CY27C256-120JC-BRIV2.1
IC202	8-759-361-90	s	IC CY6264-70SC-T2
IC203	8-759-269-12	s	IC SN74HCT08ANS
IC204	8-759-099-37	s	IC SN74HCT74ANS-E05
IC205	8-759-099-37	s	IC SN74HCT74ANS-E05
IC206	8-759-185-80	s	IC TC74VHCT138F(EL)

(IF-664A BOARD (PCS-I300))

Ref. No. or Q'ty	Part No.	SP	Description
IC207	8-759-973-71	s	IC TL7705CPS-B
IC400	8-759-272-21	s	IC TC74VHCT541F
JC400	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
L201	1-408-777-00	s	INDUCTOR, CHIP 10uH
LF201 ⚠	1-239-773-11	s	CHOKE, NOISE, COMMON-MODE
R200	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R201	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R202	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R203	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R204	1-216-845-11	s	METAL, CHIP 100k 5% 1/16W
R205	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R206	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R207	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R208	1-218-644-11	s	METAL 10 0.50% 1/16W
R209	1-218-654-11	s	METAL 27 0.50% 1/16W
R210	1-218-644-11	s	METAL 10 0.50% 1/16W
R211	1-218-654-11	s	METAL 27 0.50% 1/16W
R212	1-218-701-11	s	METAL, CHIP 2.4k 0.50% 1/16W
R213	1-218-701-11	s	METAL, CHIP 2.4k 0.50% 1/16W
R214	1-216-829-11	s	METAL, CHIP 4.7k 5% 1/16W
R215	1-216-805-11	s	METAL, CHIP 47 5% 1/16W
R400	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
RB100	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB101	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB102	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB200	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB201	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB202	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB203	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB204	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB205	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB206	1-236-907-11	s	RESISTOR BLOCK, CHIP 100kx4
RB207	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB208	1-236-908-11	s	RESISTOR BLOCK, CHIP 10kx4
RB400	1-239-430-11	s	RESISTOR BLOCK, CHIP 4.7kx4
RB401	1-239-409-11	s	RESISTOR BLOCK, CHIP 47x4
T201 ⚠	1-429-630-11	s	TRANSFORMER, INPUT/OUTPUT
T202 ⚠	1-429-630-11	s	TRANSFORMER, INPUT/OUTPUT

LED-302 BOARD (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-183-A	o	MOUNTED CIRCUIT BOARD, LED-302
CN601(to LED-302 board)			
	1-562-737-11	o	HOUSING, 4P
	1-564-832-11	o	CONTACT, BOARD IN
CN601(to MB-748 board)			
	1-569-197-11	o	HOUSING 4P
	1-569-193-11	o	CONTACT, FEMALE
D701	8-719-920-05	s	LED SLP281C-50, GREEN
D702	8-719-920-05	s	LED SLP281C-50, GREEN
D801	8-719-918-96	s	LED AA3422S, ORANGE
D802	8-719-918-96	s	LED AA3422S, ORANGE
Q701	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q801	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
R701	1-216-821-11	s	METAL, CHIP 1k 5% 1/16W
R702	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W
R801	1-216-825-11	s	METAL, CHIP 2.2k 5% 1/16W
R802	1-216-833-11	s	METAL, CHIP 10k 5% 1/16W

MB-748 BOARD (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8313-190-A	o	MOUNTED CIRCUIT BOARD, MB-748
1pc	3-344-501-01	s	SCREW (+PTT 3x6),GROUND POINT
CN201	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN202	1-750-794-21	o	CONNECTOR, BB 40P, MALE
CN301	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN302	1-750-794-21	o	CONNECTOR, BB 40P, MALE
CN401	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN402	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN501	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN502	1-580-194-21	o	CONNECTOR, BB 100P, MALE
CN601	1-506-469-11	s	CONNECTOR 4P, MALE
CN602	1-566-314-11	o	CONNECTOR, VH 10P, MALE
CN603	1-506-481-11	s	CONNECTOR 2P, MALE
CN604	1-562-941-11	s	JACK, PIN 1P, FEMALE
CN605	1-562-941-11	s	JACK, PIN 1P, FEMALE
CN606	1-562-941-11	s	JACK, PIN 1P, FEMALE
CN607	1-764-642-11	o	CONNECTOR, D-SUB 15P, FEMALE
CN608	1-565-276-21	s	JACK, MINI STEREO
CN609	1-766-194-11	o	CONNECTOR, D-SUB 9P, MALE
D601	8-719-821-35	s	DIODE 1GWJ42
F601 ⚠	1-532-779-11	s	FUSE 2A 125V
FL601	1-236-129-11	s	ENCAPSULATED COMPONENTS, LC
FL602	1-236-129-11	s	ENCAPSULATED COMPONENTS, LC
FL603	1-236-129-11	s	ENCAPSULATED COMPONENTS, LC
FL604	1-236-129-11	s	ENCAPSULATED COMPONENTS, LC
FL605	1-239-803-11	s	FILTER, NOISE
FL606	1-239-803-11	s	FILTER, NOISE
FL607	1-239-803-11	s	FILTER, NOISE
FL608	1-239-803-11	s	FILTER, NOISE
FL609	1-239-803-11	s	FILTER, NOISE
FL610	1-239-803-11	s	FILTER, NOISE
FL611	1-239-803-11	s	FILTER, NOISE
FL612	1-239-803-11	s	FILTER, NOISE
FL613	1-239-803-11	s	FILTER, NOISE
FL614	1-239-803-11	s	FILTER, NOISE
FL615	1-236-164-11	s	ENCAPSULATED COMPONENT
FL616	1-236-164-11	s	ENCAPSULATED COMPONENT
FL617	1-236-164-11	s	ENCAPSULATED COMPONENT
FL618	1-239-803-11	s	FILTER, NOISE
FL619	1-239-803-11	s	FILTER, NOISE
FL620	1-239-803-11	s	FILTER, NOISE
FL621	1-239-803-11	s	FILTER, NOISE
Q601	8-729-140-04	s	TRANSISTOR 2SB1116A
R601	1-247-855-31	s	CARBON 10k 5% 1/4W
R602	1-249-441-11	s	CARBON 100k 5% 1/4W
R604	1-249-393-11	s	CARBON 10 5% 1/4W
R605	1-247-847-31	s	CARBON 4.7k 5% 1/4W
RY601	1-515-622-11	s	RELAY
RY602	1-515-622-11	s	RELAY

FRAME (PCS-P300/P300P)

Ref. No. or Q'ty	Part No.	SP	Description
1pc	⚠ 1-468-106-11	s	REGULATOR, SWITCHING (for UC)
1pc	⚠ 1-468-107-11	s	REGULATOR, SWITCHING (for CE)
M1001	1-698-777-11	s	MOTOR, FAN D.C.

7-3. PACKING MATERIALS & SUPPLIED ACCESSORIES

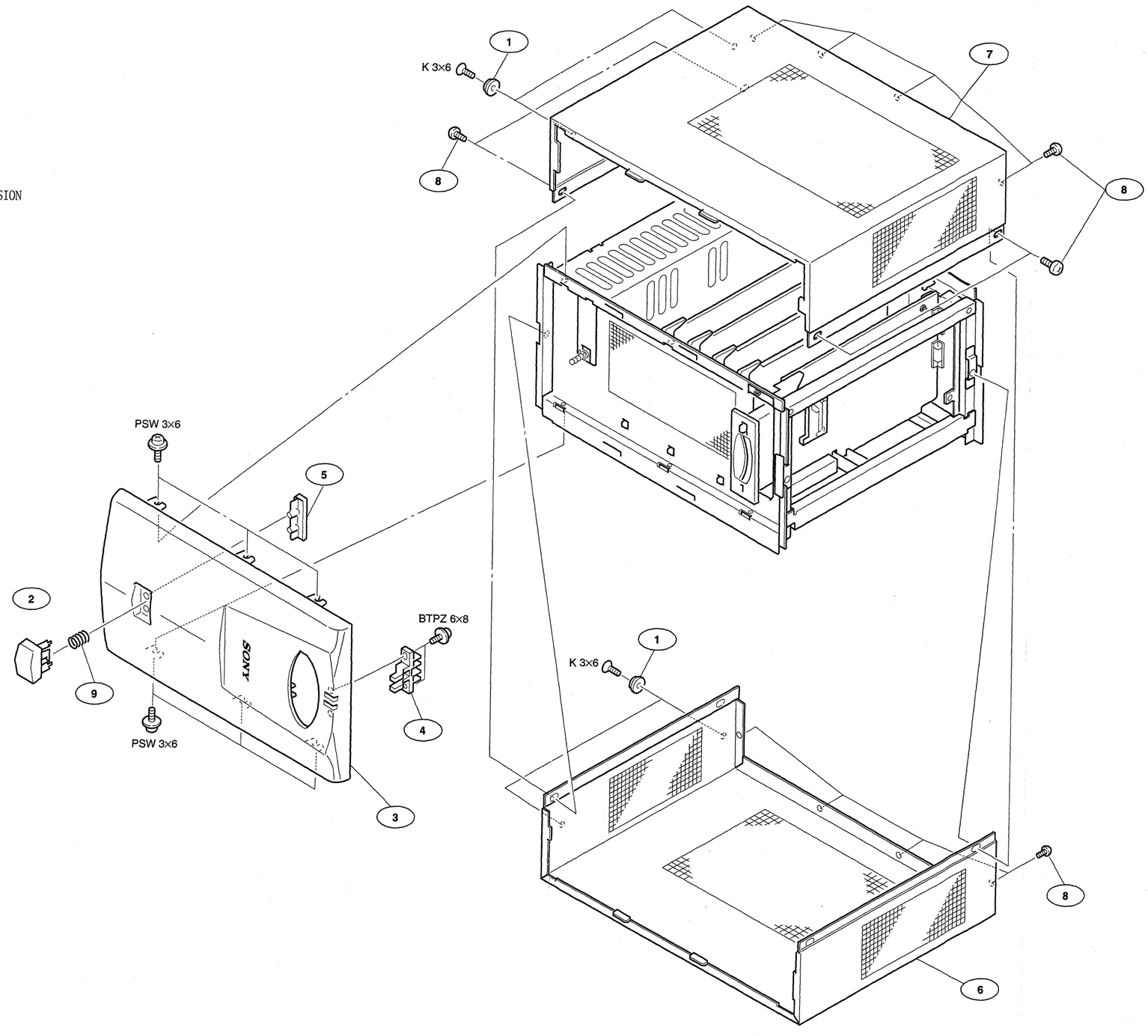
Ref. No. or Q'ty	Part No.	SP	Description
(for PCS-3000)			
1pc	1-467-685-21	s	REPEATER, IR
1pc	⚠ 1-551-812-11	s	CORD, POWER 3P(for UC)
1pc	1-751-416-11	s	CABLE, S 1.3m
1pc	1-765-258-21	s	CABLE, PIN 1m
1pc	1-782-261-11	s	CABLE 2m
2pcs	3-601-455-01	o	CUSHION,A
1pc	3-709-112-01	o	COMMANDER (BATTERY CASE)
1pc	3-859-501-11	s	MANUAL, INSTRUCTION (English)
1pc	3-859-501-21	s	MANUAL, INSTRUCTION (French)
(for PCS-3000P)			
1pc	1-467-685-21	s	REPEATER, IR
1pc	1-751-416-11	s	CABLE, S 1.3m
1pc	1-765-258-21	s	CABLE, PIN 1m
1pc	1-782-261-11	s	CABLE 2m
2pcs	3-601-455-01	o	CUSHION,A
1pc	3-709-112-01	o	COMMANDER (BATTERY CASE)
(for PCS-P300P)			
1pc	⚠ 1-590-910-11	s	POWER CORD SET (for CE)
1pc	3-859-501-11	s	MANUAL, INSTRUCTION (English)
1pc	3-859-501-21	s	MANUAL, INSTRUCTION (French)
1pc	3-859-501-31	s	MANUAL, INSTRUCTION (German)
(for PCS-I300)			
1pc	3-704-046-31	s	BAG,PREVENTION,ELECTRIFICATION
2pcs	7-682-947-01	s	SCREW +PSW 3x6

7-4. OPTIONAL FIXTURES

Ref. No. or Q'ty	Part No.	SP	Description
	J-6381-380-A	o	S-BNC VIDEO CABLE
	J-6387-400-A	o	LOOP BACK TOOL
	J-6389-610-A	o	EXTENSION BOARD, VH-961
	J-6389-620-A	o	EXTENSION BOARD, VH-962
	J-6389-630-A	o	EXTENSION BOARD, VH-963

8-2. EXPLODED VIEWS

No.	Part No.	SP	Description
1	2-382-110-00	o	LEG
2	3-695-131-11	o	BUTTON, POWER
3	3-695-132-12	o	PANEL, FRONT
4	3-695-134-01	o	GUIDE, LIGHT
5	3-695-138-02	o	JOINT, SW
6	3-696-185-11	o	CASE, LOWER
7	3-696-186-11	o	CASE, UPPER
8	3-733-690-01	s	+B 4X6 (CU,NI)
9	4-624-253-01	s	SPRING, COMPRESSION



SECTION 8
SPARE PARTS

8-1. NOTES ON SPARE PARTS

(1) Safety Related Components Warning

Components marked ⚠ on the exploded views and electrical parts list are critical to safety. Replace only with the components specified.

(2) Standardization of Parts

Replacement parts supplied from the Sony Parts Center will sometimes have a different shape or external appearance from the parts originally used in the unit.

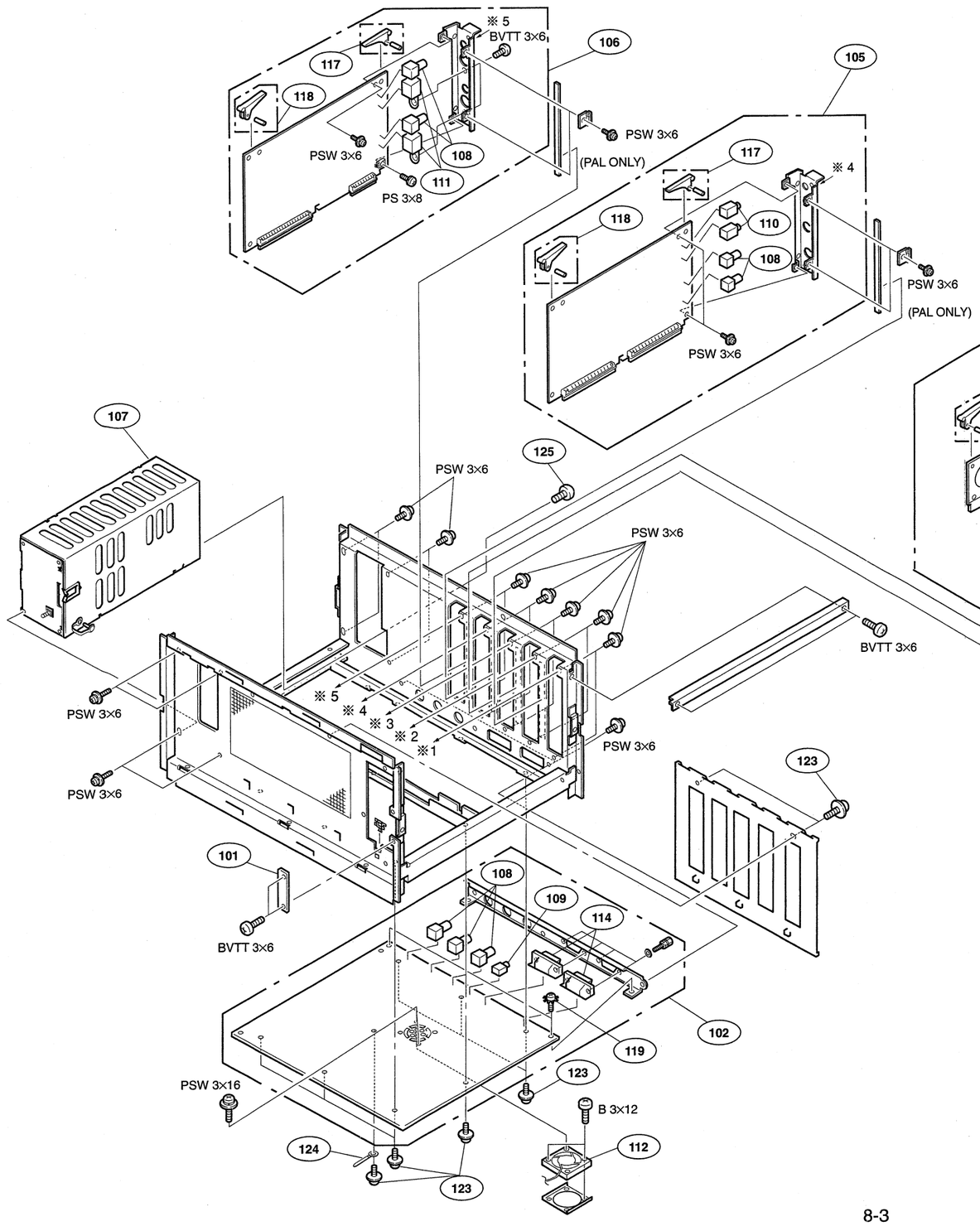
This is due to improvements, engineering changes, or standardization of parts.

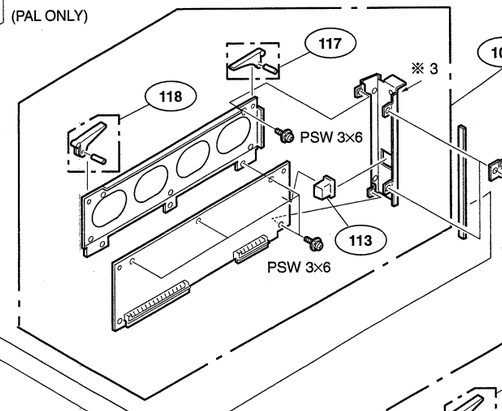
This manual's exploded views and electrical parts lists indicate the part numbers of current standard parts.

(3) Stock of Parts

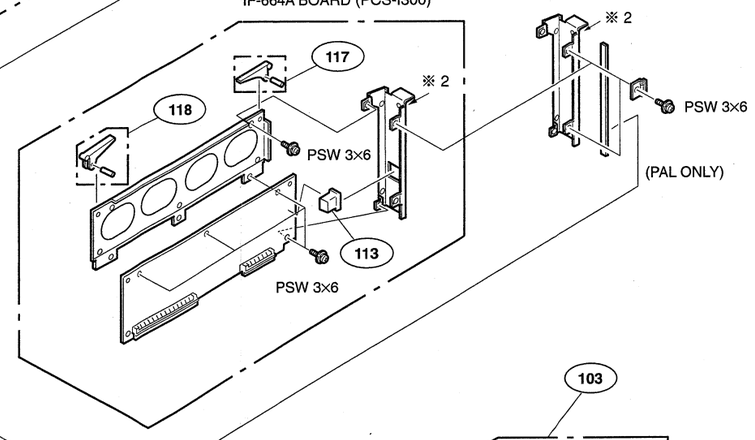
The parts marked with an "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow additional time for delivery.

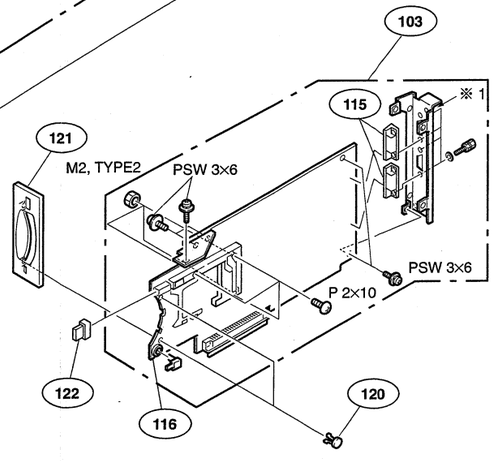
8-1





(PAL ONLY) OPTION
IF-664A BOARD (PCS-I300)





No.	Part No.	SP	Description
101	A-8313-183-A	o	MOUNTED CIRCUIT BOARD, LED-302
102	A-8313-190-A	o	MOUNTED CIRCUIT BOARD, MB-748
103	A-8313-191-A	o	MOUNTED CIRCUIT BOARD, CPU-249
104	A-8313-192-A	o	MOUNTED CIRCUIT BOARD, IF-664
105	A-8313-193-A	o	MOUNTED CIRCUIT BOARD, DPR-97
106	A-8313-194-A	o	MOUNTED CIRCUIT BOARD, DAD-31P(for CE)
	A-8313-195-A	o	MOUNTED CIRCUIT BOARD, DAD-31(for UC)
107 ⚠	1-468-106-11	s	REGULATOR, SWITCHING (for UC)
⚠	1-468-107-11	s	REGULATOR, SWITCHING (for CE)
108	1-562-941-41	s	JACK, PIN
109	1-565-276-21	s	JACK, MINI STEREO
110	1-566-740-11	s	JACK, PIN
111	1-566-848-11	s	CONNECTOR, CIRULAR 4P(S)
112	1-698-777-11	s	MOTOR, FAN DC
113	1-750-944-11	s	JACK, MODULAR (8P-8C)
114	1-764-642-11	s	CONNECTOR, D-SUB 15P
115	1-766-194-11	s	CONNECTOR, D-SUB 9P
116	2-832-007-00	s	BUSHING (K), INSULATING
117	3-179-084-01	s	LEVER (R), PC BOARD
118	3-179-085-01	s	LEVER (L), PC BOARD
119	3-344-501-01	s	SCREW (+PTT 3x6), GROUND POINT
120	3-531-576-11	s	RIVET
121	3-695-130-11	o	FRONT PANEL, IC
122	3-695-137-11	o	BUTTON, IC CARD
123	3-703-249-21	s	SCREW, S TIGHT, +PTTWH (M3x8)
124	3-703-397-01	s	STOPPER, WIRING
125	3-733-690-01	s	SCREW (+B 4x6) (CU,NI)

CPU-249 : CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL

CPU-249(1-665-219-11)
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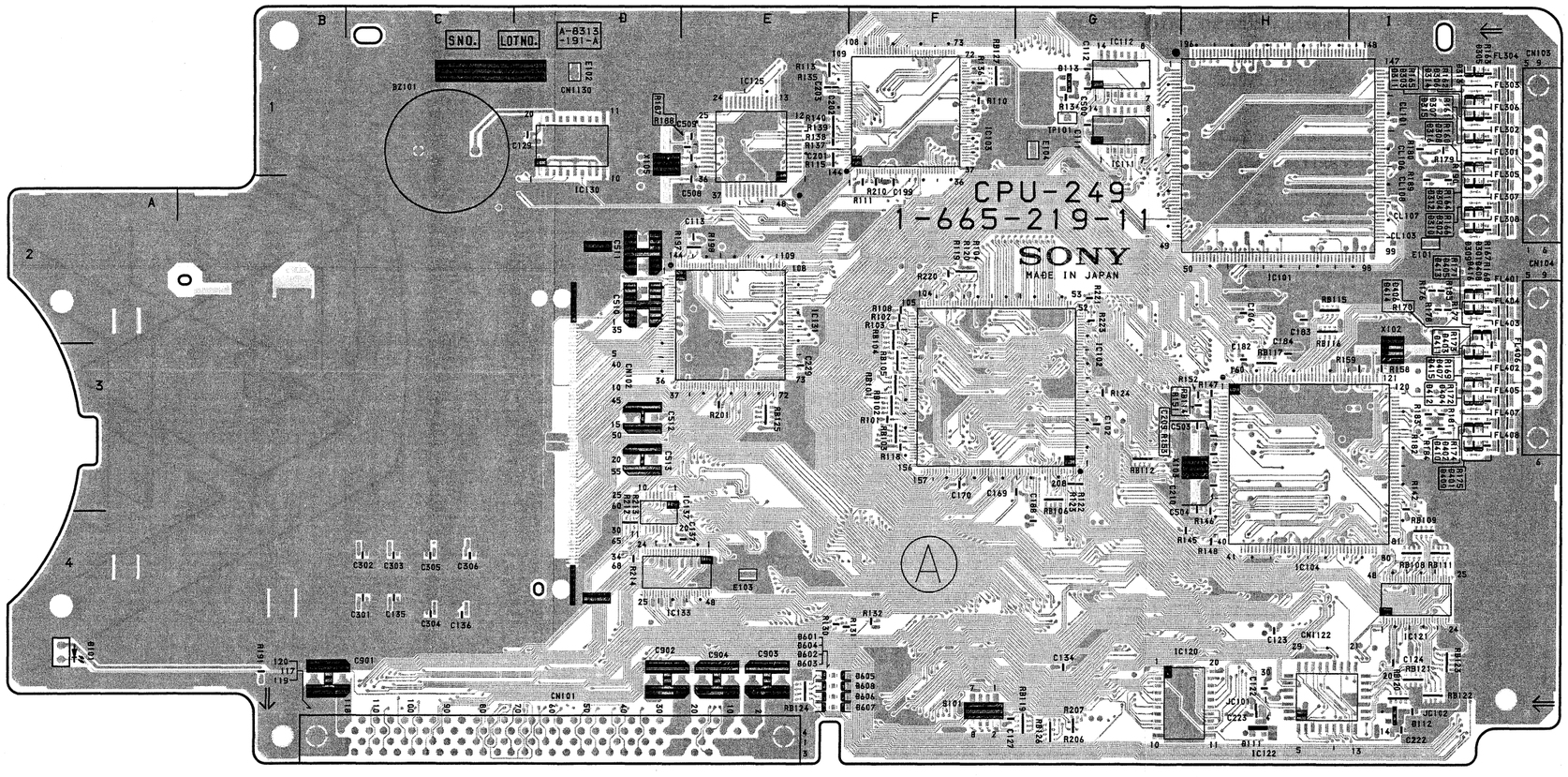
*:B SIDE

BZ101	C1	E104	G1	Q101	*F4
		E105	*H1	Q102	*F4
CL101	I1	E106	*C2	Q201	*D3
CL103	I2			Q202	*D3
CL106	I1	FL301	I1		
CL107	I2	FL302	I1	RB101	F3
CL108	I2	FL303	I1	RB102	F3
		FL304	I1	RB103	F3
CN101	D4	FL305	I1	RB104	F2
CN102	D3	FL306	I1	RB105	F3
CN103	I1	FL307	I2	RB106	G3
CN104	I2	FL308	I2	RB107	*F2
		FL401	I2	RB108	I4
CNI122	H4	FL402	I3	RB109	I4
CNI130	D1	FL403	I2	RB110	*I4
		FL404	I2	RB111	I4
D101	A4	FL405	I3	RB112	G3
D111	H4	FL406	I3	RB113	*F3
D112	I4	FL407	I3	RB114	H3
D113	G1	FL408	I3	RB115	H2
D301	I2			RB116	H2
D302	I2	IC101	H2	RB117	H3
D303	I1	IC102	G3	RB118	*H3
D304	I2	IC103	F1	RB119	G4
D305	I1	IC104	H4	RB120	I4
D306	I1	IC105	*H2	RB121	I4
D307	I1	IC106	*H2	RB122	I4
D308	I1	IC107	*F3	RB123	I4
D309	I2	IC108	*G3	RB124	E4
D310	I2	IC109	*G3	RB125	E3
D311	I1	IC110	*I3	RB126	G4
D312	I2	IC111	G1	RB127	F1
D313	I1	IC112	G1	RB128	*D4
D314	I1	IC113	*E2	RB129	*C4
D315	I1	IC114	*F4	RB130	*C4
D316	I1	IC115	*I1	RB131	*C4
D401	I3	IC116	*I3	RB132	*C4
D402	I3	IC117	*I2	RB133	*C4
D403	I2	IC118	*I2	RB134	*B4
D404	I3	IC119	*I3	RB135	*B4
D405	I2	IC120	G4		
D406	I2	IC121	I4	S101	F4
D407	I3	IC122	H4		
D408	I2	IC123	*H4	TP101	G1
D409	I3	IC124	*I4		
D410	I3	IC125	E1	X101	*F2
D411	I2	IC126	*D1	X102	I2
D412	I3	IC127	*G4	X103	G3
D413	I2	IC128	*F4	X105	D1
D414	I2	IC129	*C2		
D415	I3	IC130	D2		
D416	I2	IC131	E2		
D601	E4	IC132	*D2		
D602	E4	IC133	D4		
D603	E4	IC134	*G4		
D604	E4	IC135	*C4		
D605	F4	IC136	*B4		
D606	F4	IC137	E3		
D607	F4				
D608	F4	L101	*H3		
E101	I2	PS201	*D3		
E102	D1	PS202	*D3		
E103	E4				



CPU-249 -A SIDE-
PART NO 1-665-219-11
MODEL PCS-P300/P300P

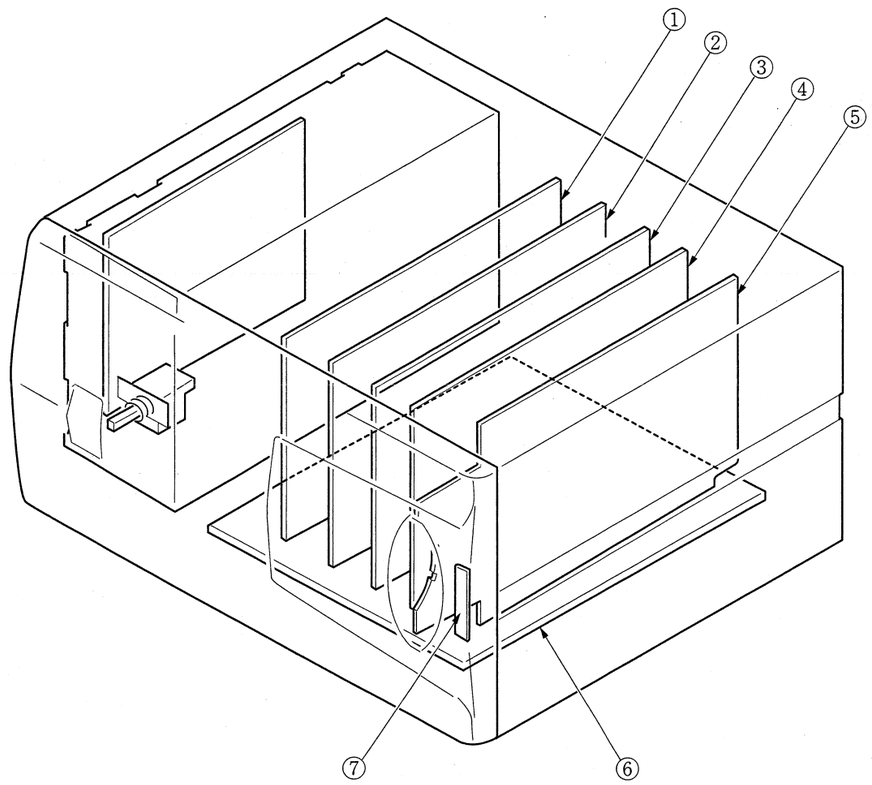
SECTION 9
SCHEMATIC DIAGRAMS AND BOARD LAYOUTS

CIRCUIT CONFIGURATION

The circuit information is porovided below.

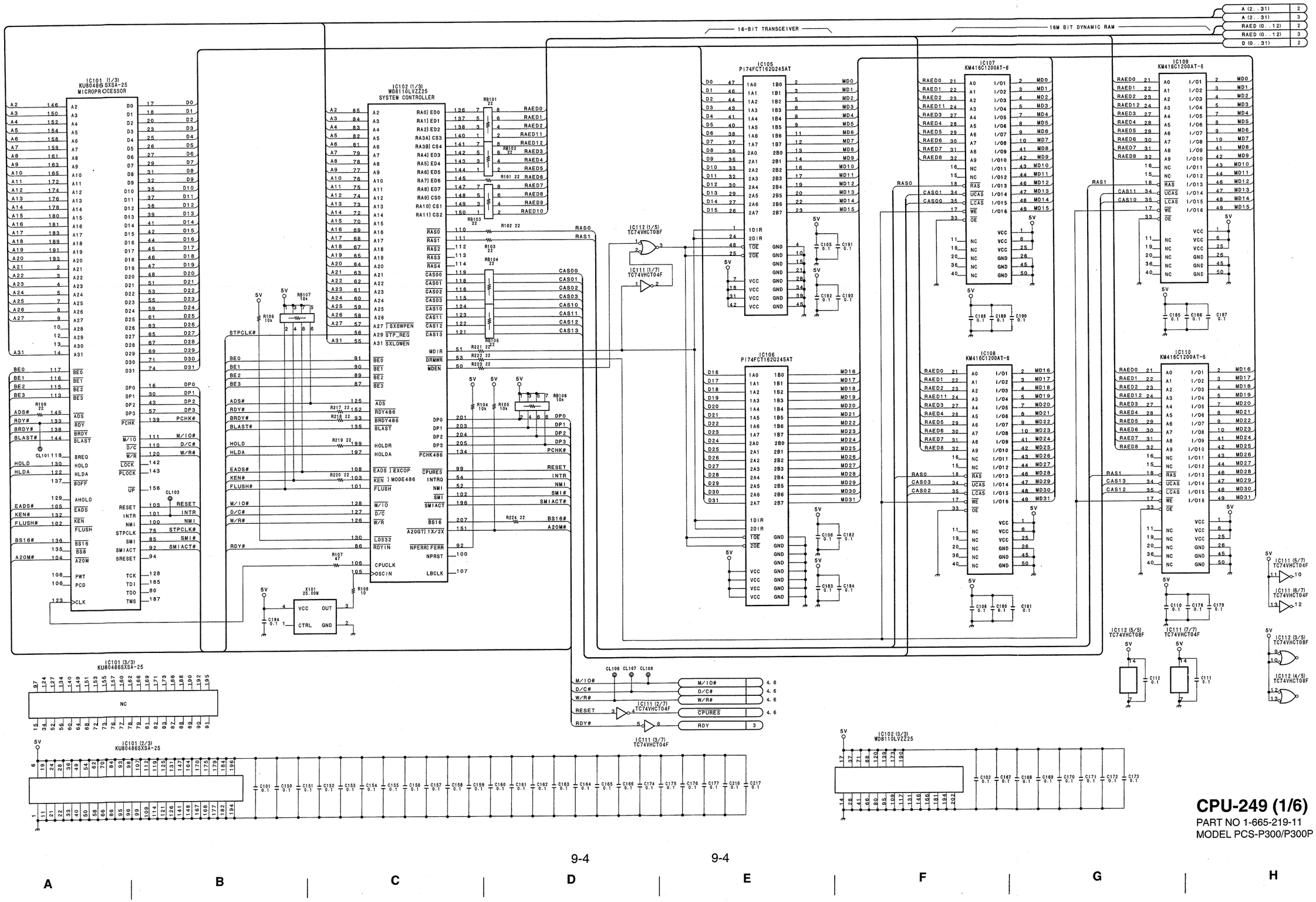
BOARD NAME	CIRCUIT FUNCTION	PAGE
CPU-249	CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL	9-2
DAD-31/31P	VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL	9-10
DPR-97	VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER	9-28
IF-664	ISDN BRI LINE INTERFACE	9-36
IF-664A	BRI BOARD	9-36
LED-302	LED INDICATOR	9-40
MB-748	CONNECTORS BOARD	9-40

Circuit Boards Layout

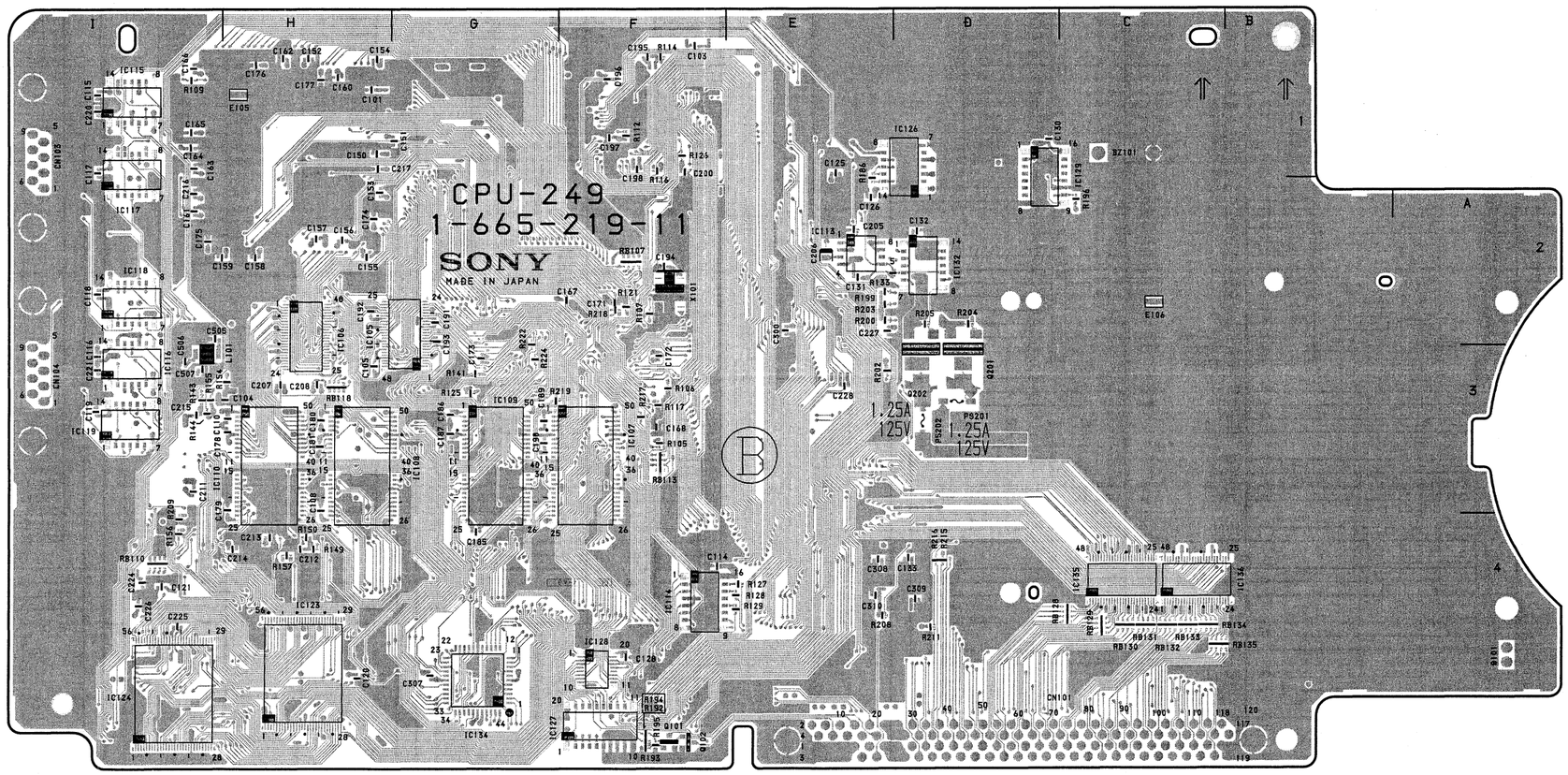


① DAD-31/31P board
② DPR-97 board
③ IF-664 board
④ Option board (IF-664A board/PCS-I300 or IF-542 board/PCS-I500)
⑤ CPU-249 board
⑥ MB-748 board
⑦ LED-302 board

CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL

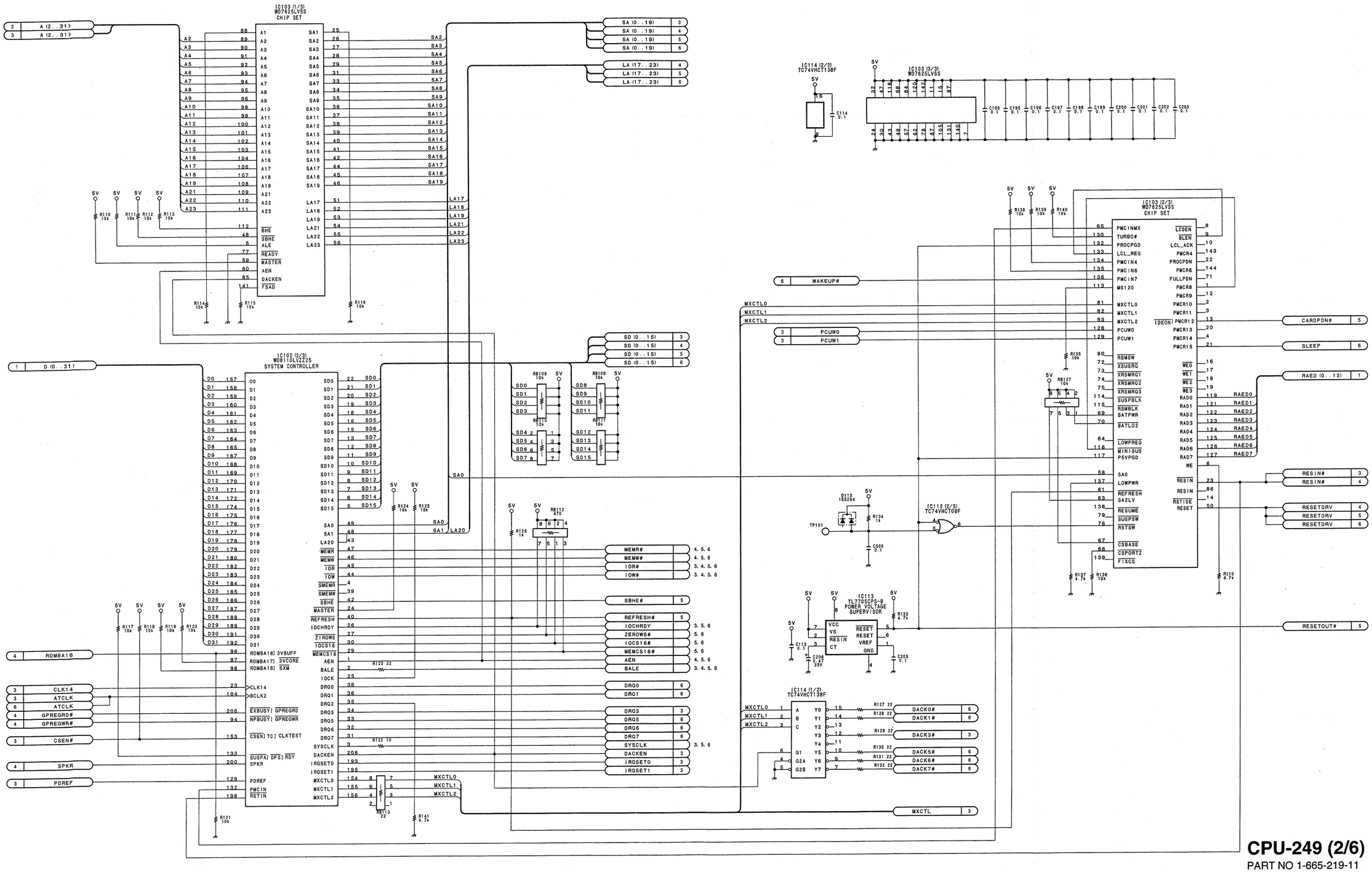


CPU-249 (1/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P



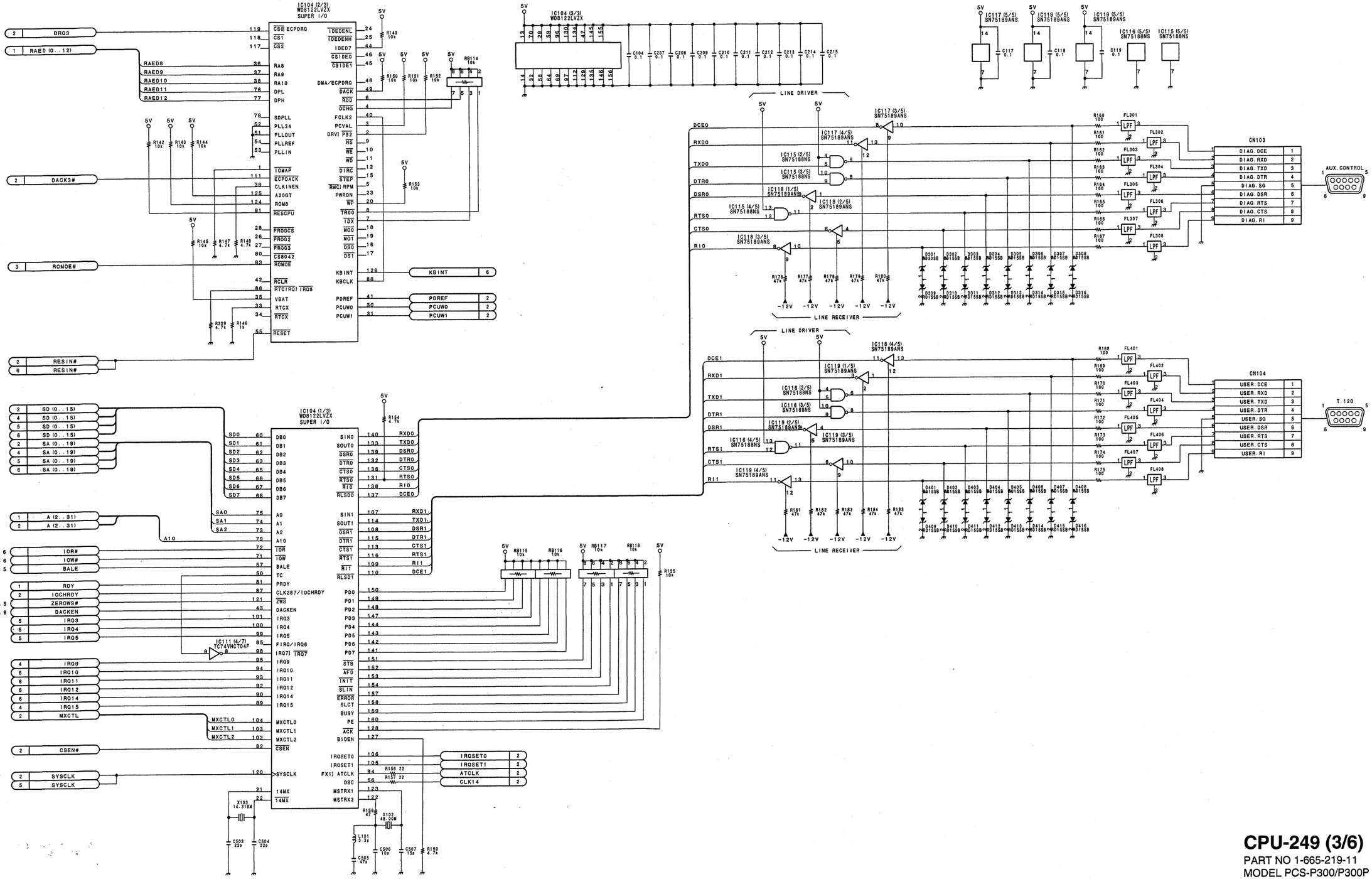
CPU-249 -B SIDE-
PART NO 1-665-219-11
MODEL PCS-P300/P300P

CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL



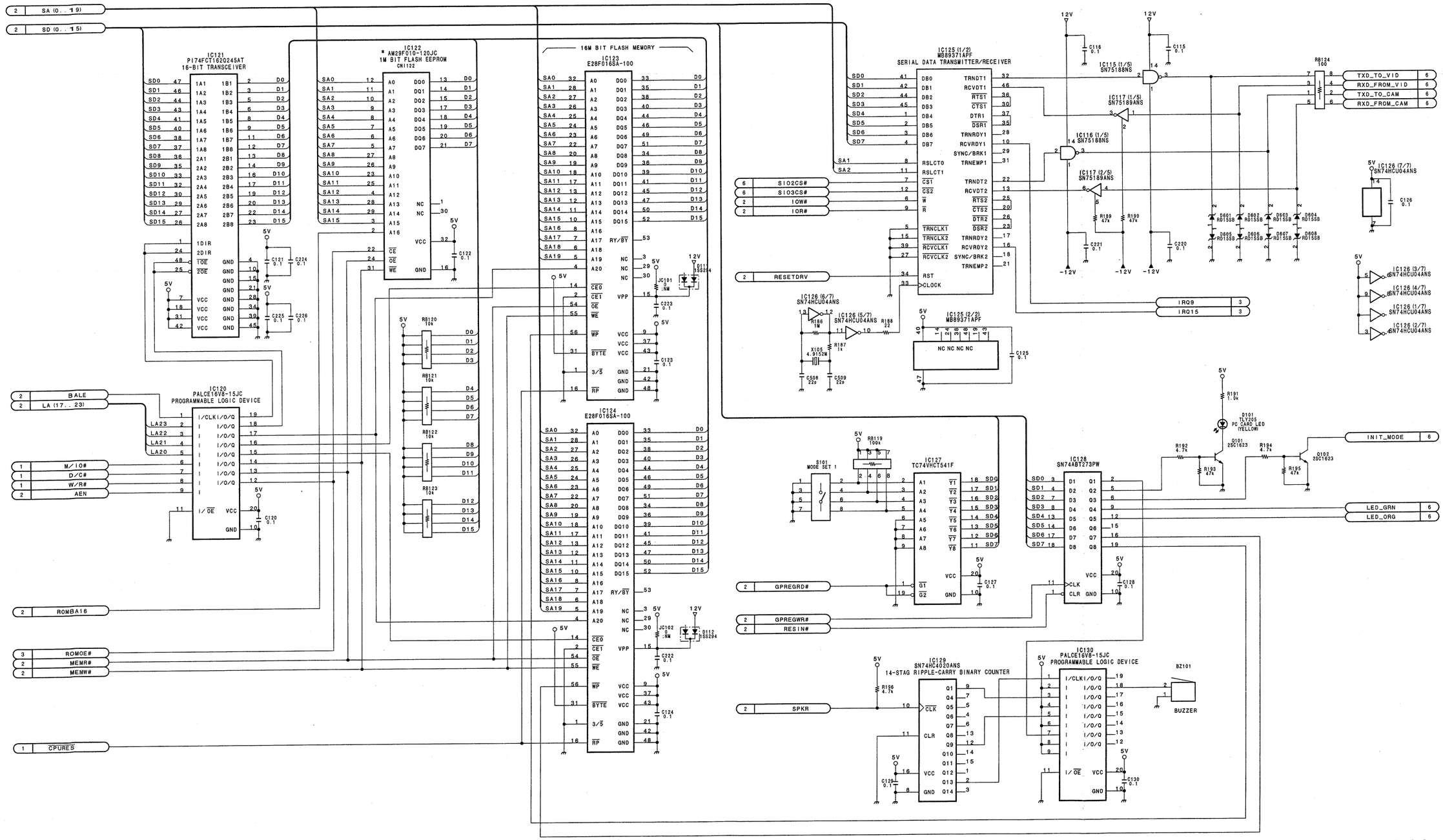
CPU-249 (2/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P

CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL



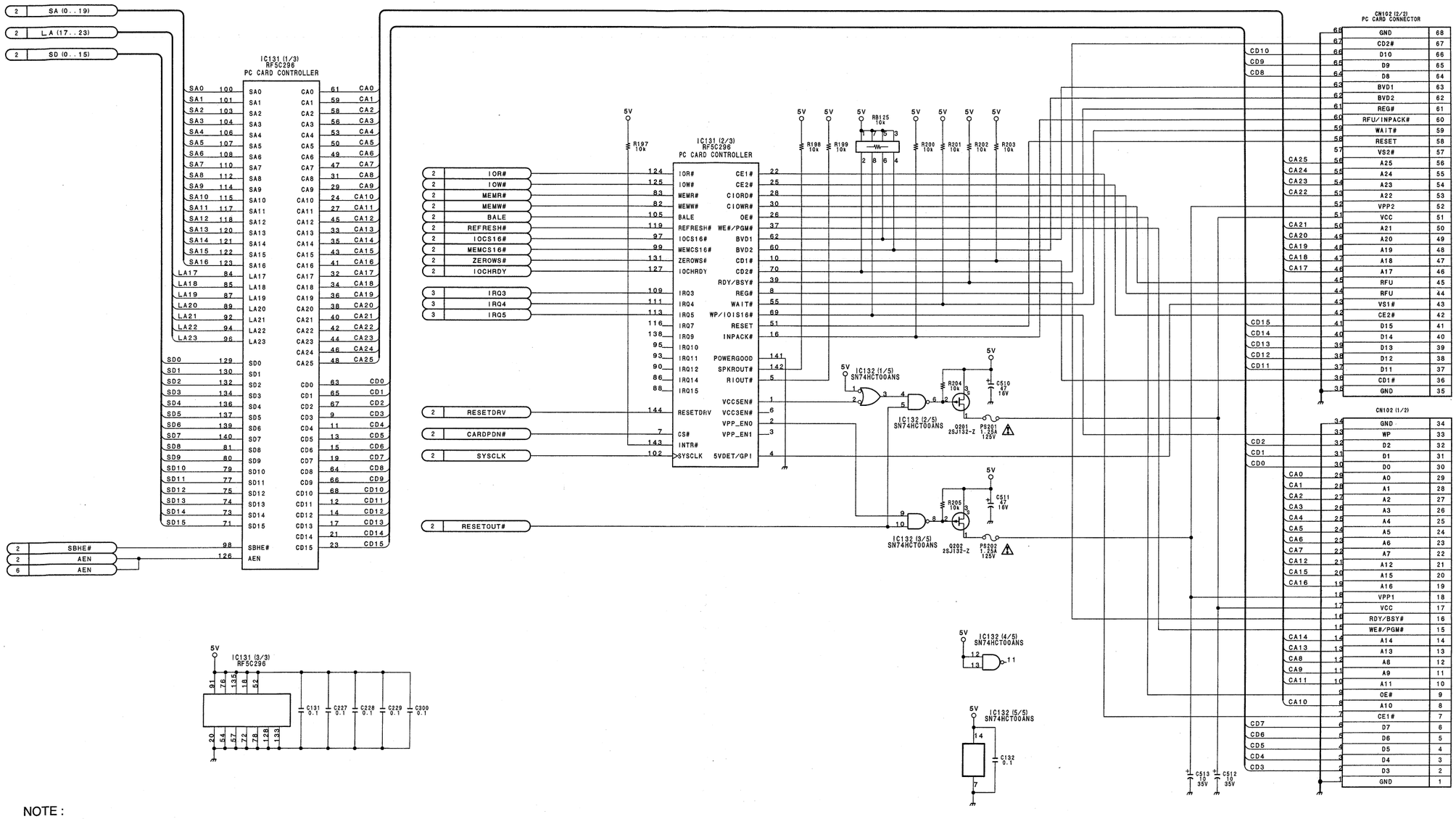
CPU-249 (3/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P

CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL



CPU-249 (4/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P

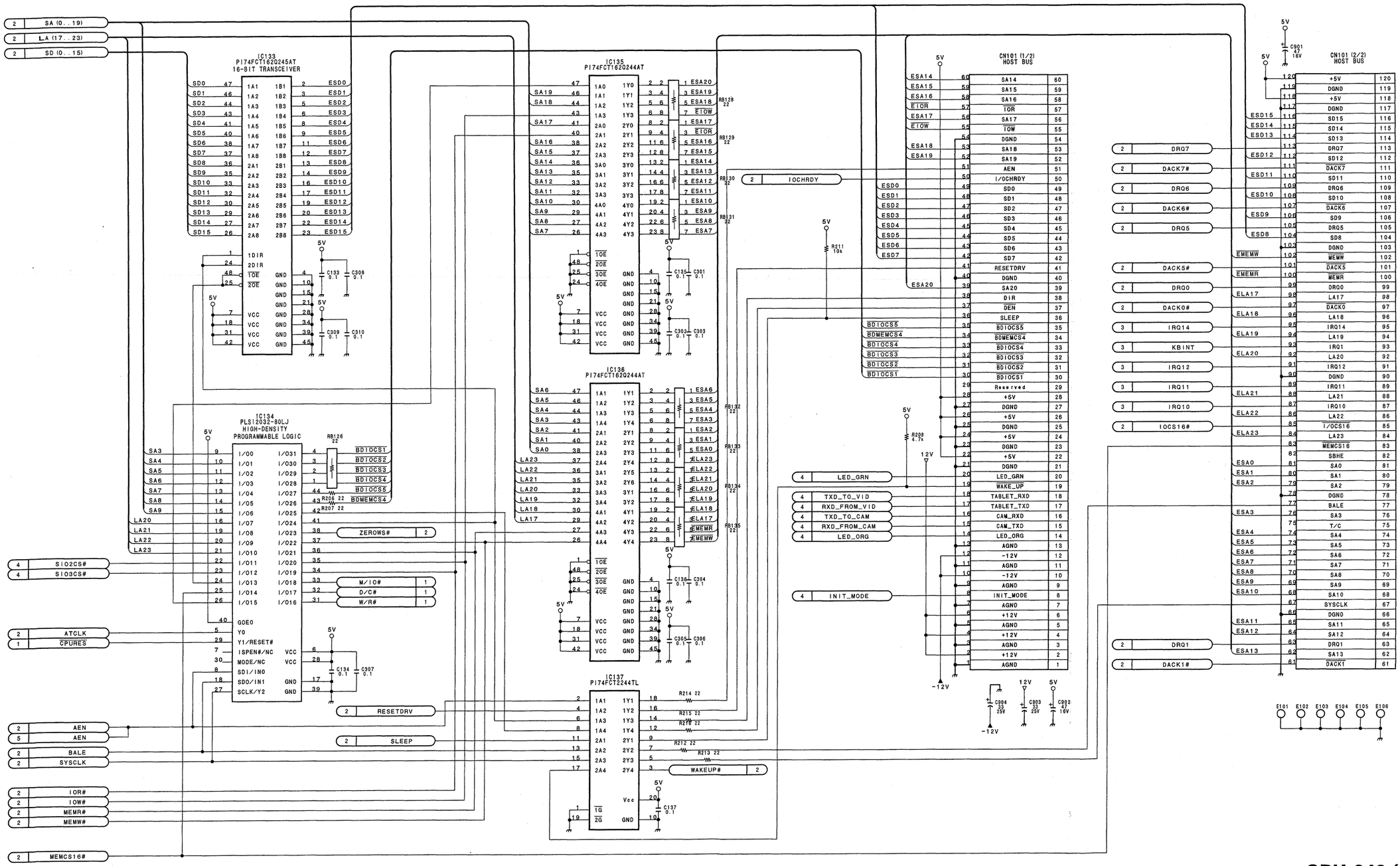
CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL



NOTE :
The ⚠-marked components are critical to safety.
Replace only with same components as specified.

CPU-249 (5/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P

CPU, MEMORY CONTROL, I/O CONTROL FOR EACH BOARDS AND IC CARD CONTROL



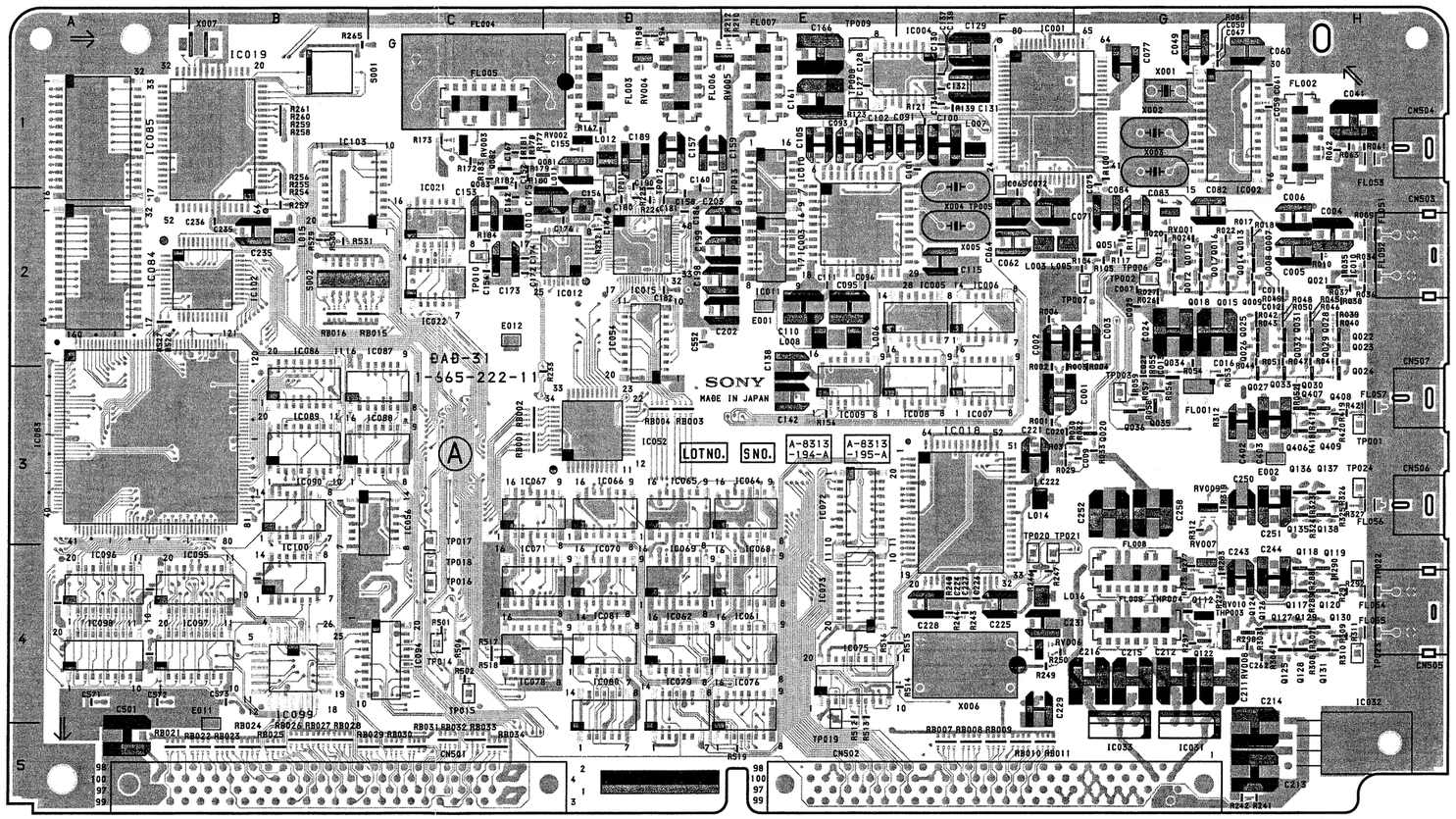
CPU-249 (6/6)
PART NO 1-665-219-11
MODEL PCS-P300/P300P

DAD-31/31P : VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

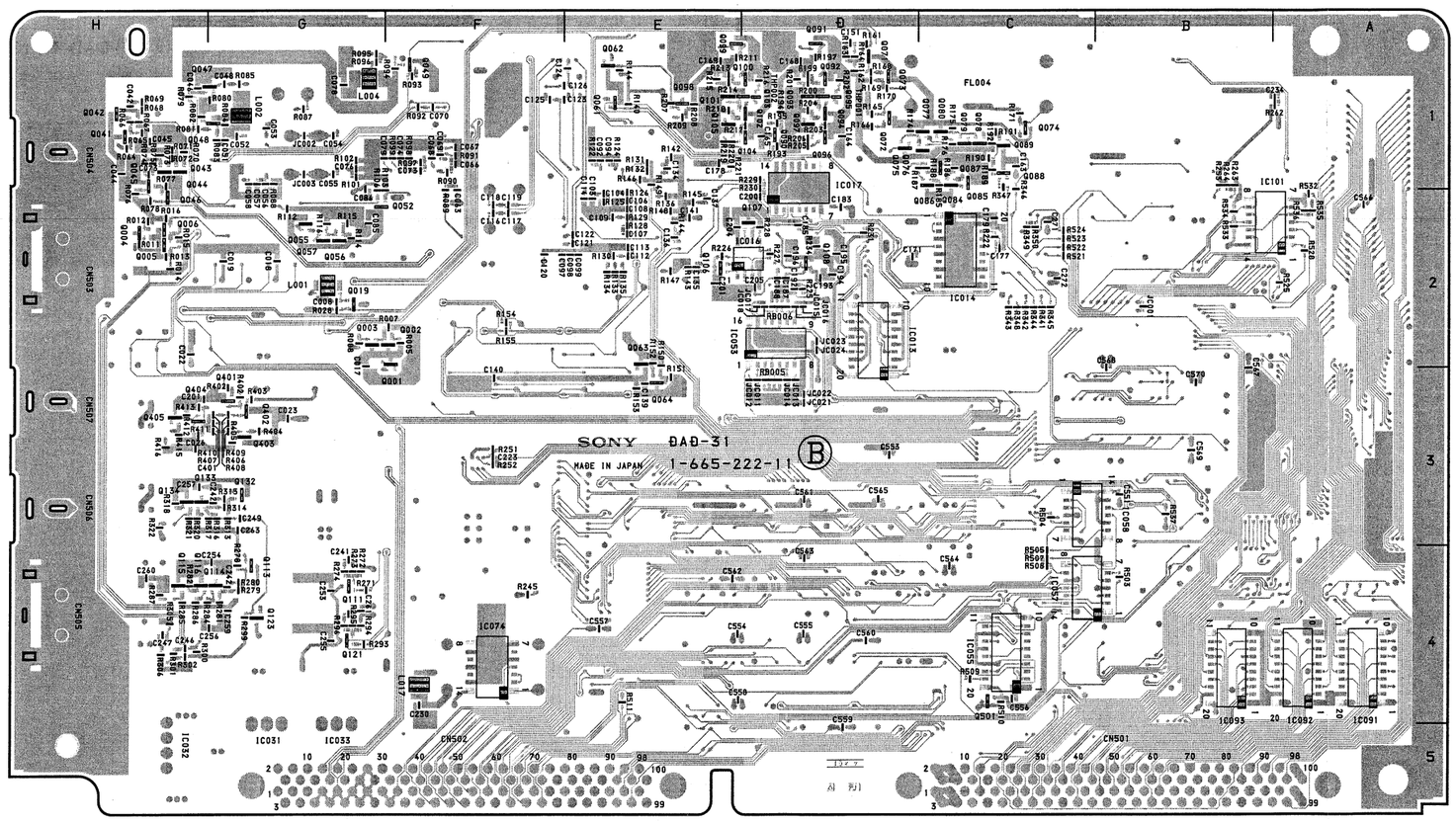
DAD-31/31P(1-665-222-11)

*:B SIDE

CN501	C5	IC092	*A4	Q078	*C1	RB028	B5
CN502	E5	IC093	*B4	Q079	*C1	RB029	C5
CN503	H2	IC094	C4	Q080	*C1	RB030	C5
CN504	H1	IC095	B4	Q081	D1	RB031	C5
CN505	H4	IC096	A4	Q082	C1	RB032	C5
CN506	H3	IC097	B4	Q083	C1	RB033	C5
CN507	H2	IC098	A4	Q084	*C2	RB034	C5
		IC099	B4	Q085	*C2		
E001	E2	IC100	B4	Q086	*C2	RV001	G2
E002	H3	IC101	*B1	Q087	*C1	RV002	D1
E011	B4	IC102	B2	Q088	*C1	RV003	C1
E012	C2	IC103	B1	Q089	*C1	RV004	D1
				Q090	*D1	RV005	E1
FL001	G3	L001	*G2	Q091	*D1	RV006	F4
FL002	H1	L002	*G1	Q092	*D1	RV007	G4
FL003	D1	L003	F2	Q093	*D1	RV008	G4
FL004	C1	L004	*G1	Q094	*D1	RV009	G3
FL005	C1	L005	F2	Q095	*D1	RV010	G4
FL006	D1	L006	E2	Q096	*D1		
FL007	E1	L007	F1	Q097	*D1	S001	C1
FL008	G4	L008	E2	Q098	*E1	S002	B2
FL009	G4	L010	C2	Q099	*E1		
FL051	H2	L011	D1	Q100	*E1	THP001	*D1
FL052	H2	L012	D1	Q101	*E1	THP002	*D1
FL053	H1	L014	F3	Q102	*D1	THP003	G4
FL054	H4	L015	B2	Q103	*D1	THP004	G4
FL055	H4	L016	F4	Q104	*D1		
FL056	H3	L017	*F4	Q105	*E1	TP001	H3
FL057	H3			Q106	*E2	TP002	G2
		Q001	*F3	Q107	*D2	TP003	G3
IC001	F1	Q002	*F2	Q108	*D2	TP005	F2
IC002	G2	Q003	*G2	Q111	*G4	TP006	G2
IC003	E2	Q004	*H2	Q112	G4	TP007	F2
IC004	F1	Q005	*H2	Q113	*G4	TP008	E1
IC005	F2	Q006	*H2	Q114	*G4	TP009	E1
IC006	F2	Q007	H2	Q115	*H4	TP010	C2
IC007	F3	Q008	H2	Q116	*H4	TP011	D1
IC008	F3	Q009	H2	Q117	H4	TP012	D1
IC009	E3	Q010	G2	Q118	H4	TP013	E1
IC010	E1	Q011	G2	Q119	H4	TP014	C4
IC011	E2	Q012	G2	Q120	H4	TP015	C4
IC012	D2	Q013	G2	Q121	*G4	TP016	C4
IC013	*D2	Q014	G2	Q122	G4	TP017	C3
IC014	*C2	Q015	G2	Q123	*G4	TP018	C4
IC015	D2	Q016	G2	Q124	H4	TP019	E5
IC016	*E2	Q017	G2	Q125	H4	TP020	F3
IC017	*D1	Q018	G2	Q126	H4	TP021	F3
IC018	F3	Q019	*G2	Q127	H4	TP022	H4
IC019	B1	Q020	G3	Q128	H4	TP023	H4
IC021	C1	Q021	H2	Q129	H4	TP024	H3
IC022	C2	Q022	H2	Q130	H4		
IC031	G5	Q023	H2	Q131	H4	X001	G1
IC032	H4	Q024	H3	Q132	*G3	X002	G1
IC033	G5	Q025	G2	Q133	*H3	X003	G1
IC052	D3	Q026	G2	Q134	*H3	X004	F2
IC053	*E2	Q027	H3	Q135	H3	X005	F2
IC054	D2	Q028	H2	Q136	H3	X006	F4
IC055	*C4	Q029	H2	Q137	H3	X007	B1
IC056	C3	Q030	H3	Q138	H3		
IC057	*C4	Q031	H2	Q401	*G3		
IC058	*B3	Q032	H2	Q402	*G3		
IC061	E4	Q033	H3	Q403	*G3		
IC062	D4	Q034	G2	Q404	*H3		
IC064	E3	Q035	G3	Q405	*H3		
IC065	D3	Q036	G3	Q406	H3		
IC066	D3	Q041	*H1	Q407	H3		
IC067	C3	Q042	*H1	Q408	H3		
IC068	E4	Q043	*H1	Q409	H3		
IC069	D4	Q044	*H1	Q501	*C4		
IC070	D4	Q045	*H1				
IC071	C4	Q046	*H2	RB001	C3		
IC072	E3	Q047	*H1	RB002	C3		
IC073	E4	Q048	*H1	RB003	D3		
IC074	*F4	Q049	*F1	RB004	D3		
IC075	E4	Q051	G2	RB005	*D3		
IC076	E4	Q052	*F2	RB006	*E2		
IC078	C4	Q055	*G2	RB007	F5		
IC079	D4	Q056	*G2	RB008	F5		
IC080	D4	Q057	*G2	RB009	F5		
IC081	D4	Q061	*E1	RB010	F5		
IC083	A3	Q062	*E1	RB011	F5		
IC084	A2	Q063	*E2	RB015	C2		
IC085	A1	Q064	*E3	RB016	B2		
IC086	B2	Q071	*D1	RB021	A5		
IC087	C2	Q072	*D1	RB022	B5		
IC088	C3	Q073	*D1	RB023	B5		
IC089	B3	Q074	*C1	RB024	B5		
IC090	B3	Q075	*D1	RB025	B5		
IC091	*A4	Q076	*D1	RB026	B5		
		Q077	*C1	RB027	B5		



DAD-31/31P -A SIDE-
PART NO 1-665-222-11
MODEL PCS-P300/P300P

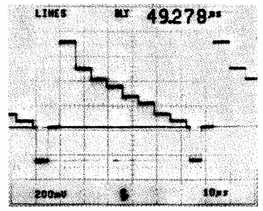


DAD-31/31P -B SIDE-
PART NO 1-665-222-11
MODEL PCS-P300/P300P

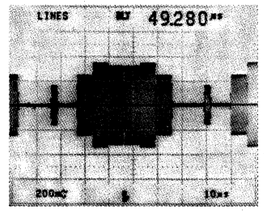
DAD-31/31P (1/9)

For NTSC (DAD-31)

① TP2/DAD-31 (G2)

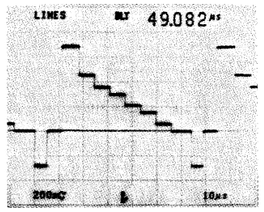


② TP3/DAD-31 (G3)

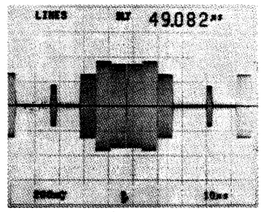


For PAL (DAD-31P)

① TP2/DAD-31P (G2)

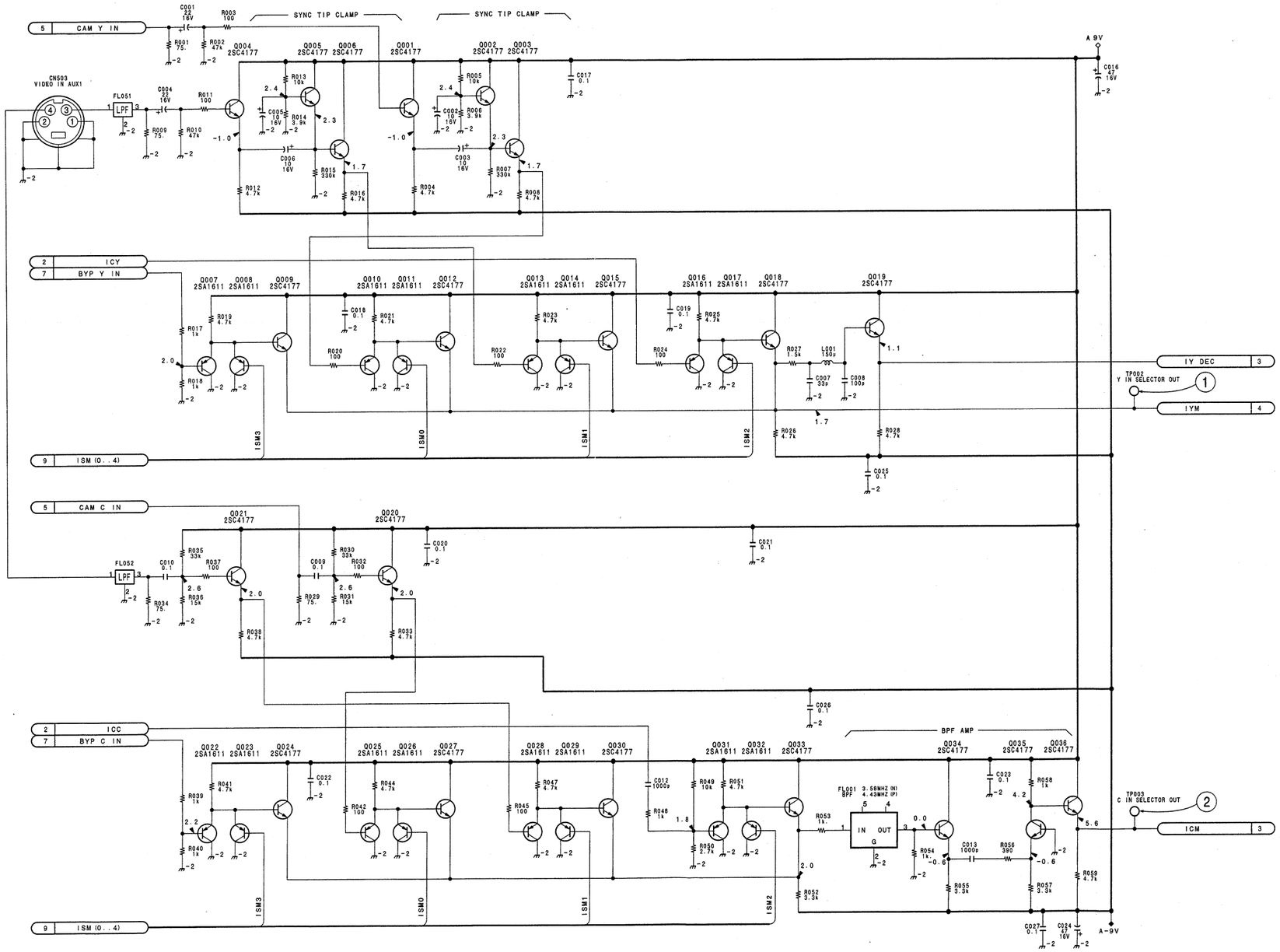


② TP3/DAD-31P (G3)



9-12

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

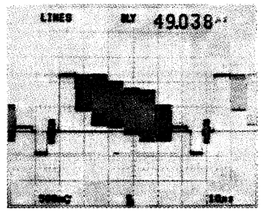


DAD-31/31P (1/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

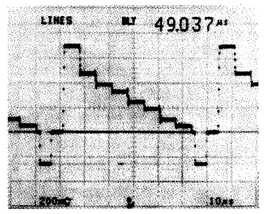
DAD-31/31P (2/9)

For NTSC (DAD-31)

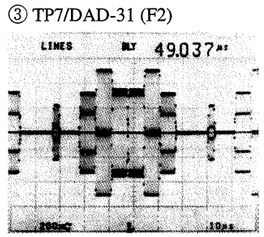
① TP5/DAD-31 (F2)



② TP6/DAD-31 (G2)

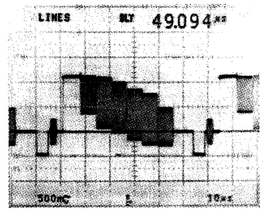


③ TP7/DAD-31 (F2)

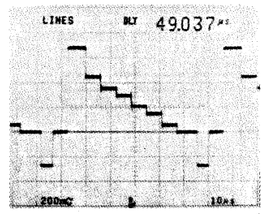


For PAL (DAD-31P)

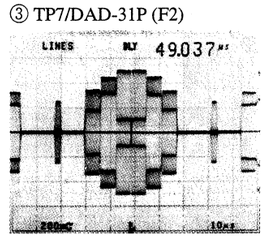
① TP5/DAD-31P (F2)



② TP6/DAD-31P (G2)

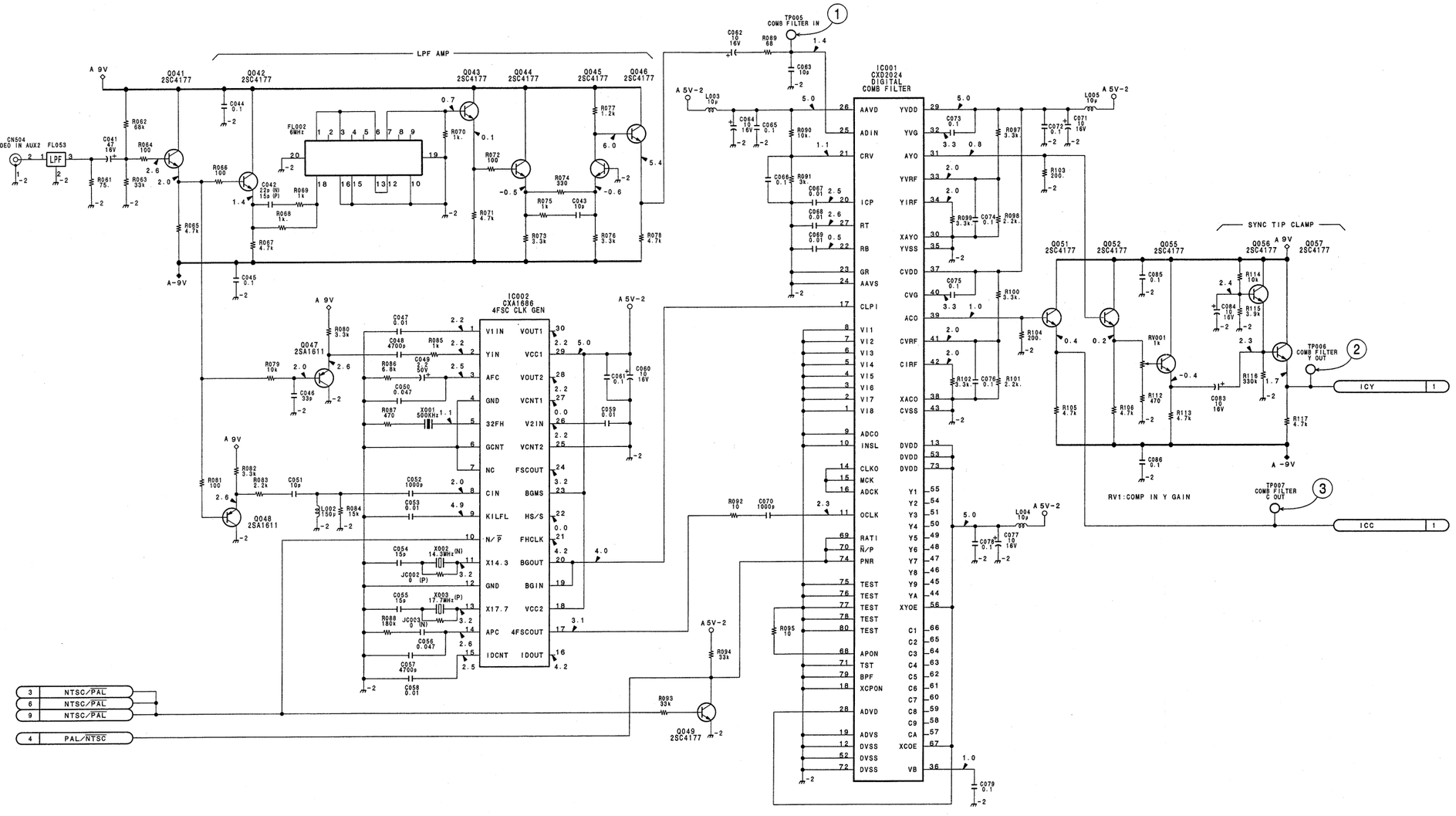


③ TP7/DAD-31P (F2)



9-14

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

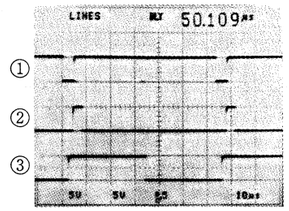


DAD-31/31P (2/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

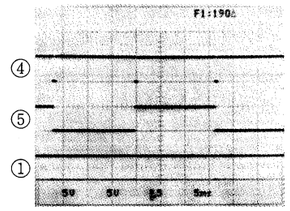
DAD-31/31P (3/9)

For NTSC (DAD-31)

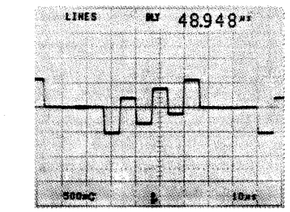
① IC3-13 pin/DAD-31 (E2)
② IC3-8 pin/DAD-31 (E2)
③ IC3-14 pin/DAD-31 (E2)



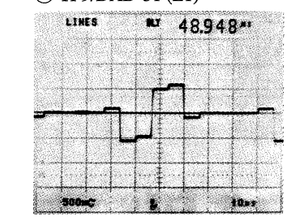
④ IC3-4 pin/DAD-31 (E2)
⑤ IC3-7 pin/DAD-31 (E2)
① IC3-13 pin/DAD-31 (E2)



⑥ TP8/DAD-31 (E1)

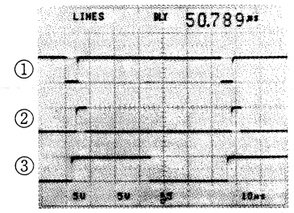


⑦ TP9/DAD-31 (E1)

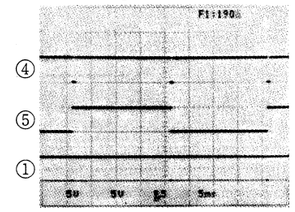


For PAL (DAD-31P)

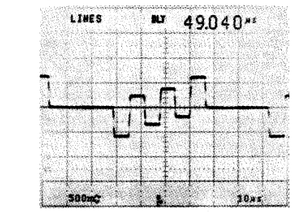
① IC3-13 pin/DAD-31P (E2)
② IC3-8 pin/DAD-31P (E2)
③ IC3-14 pin/DAD-31P (E2)



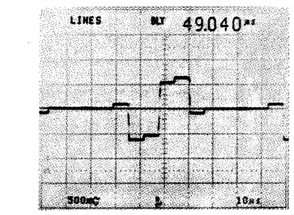
④ IC3-4 pin/DAD-31P (E2)
⑤ IC3-7 pin/DAD-31P (E2)
① IC3-13 pin/DAD-31P (E2)



⑥ TP8/DAD-31P (E1)

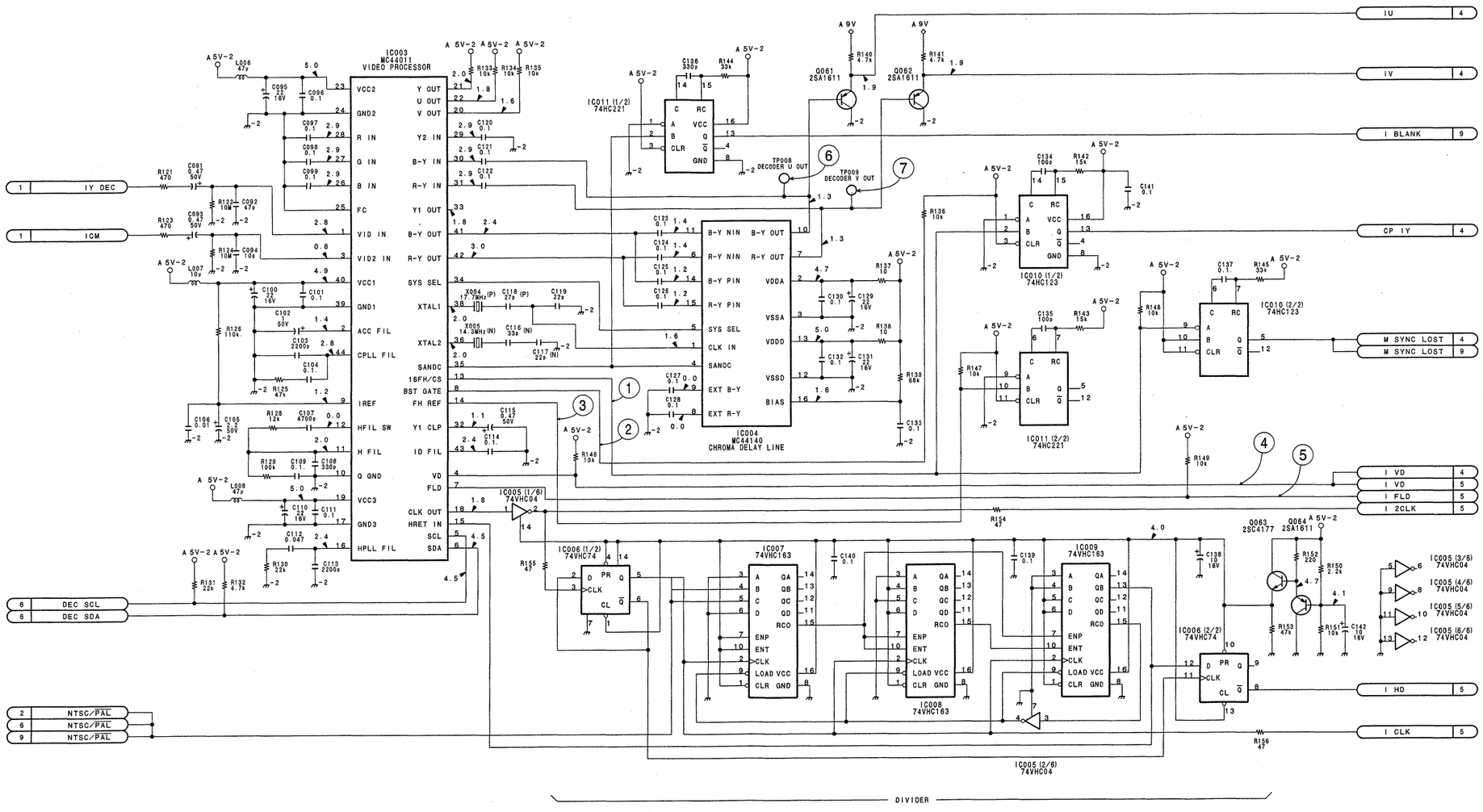


⑦ TP9/DAD-31P (E1)



9-16

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

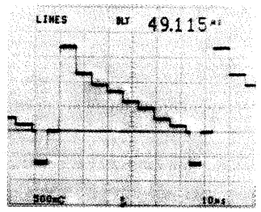


DAD-31/31P (3/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

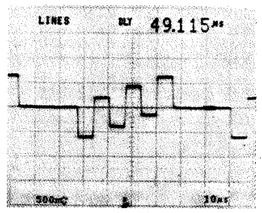
DAD-31/31P (4/9)

For NTSC (DAD-31)

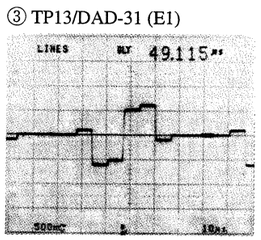
① TP11/DAD-31 (D1)



② TP12/DAD-31 (D1)

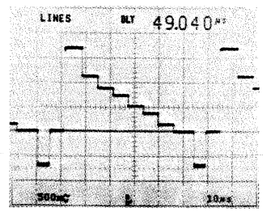


③ TP13/DAD-31 (E1)

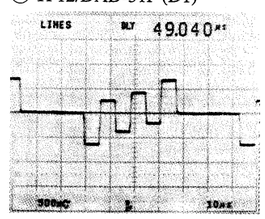


For PAL (DAD-31P)

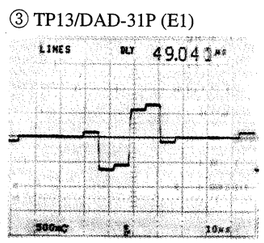
① TP11/DAD-31P (D1)



② TP12/DAD-31P (D1)

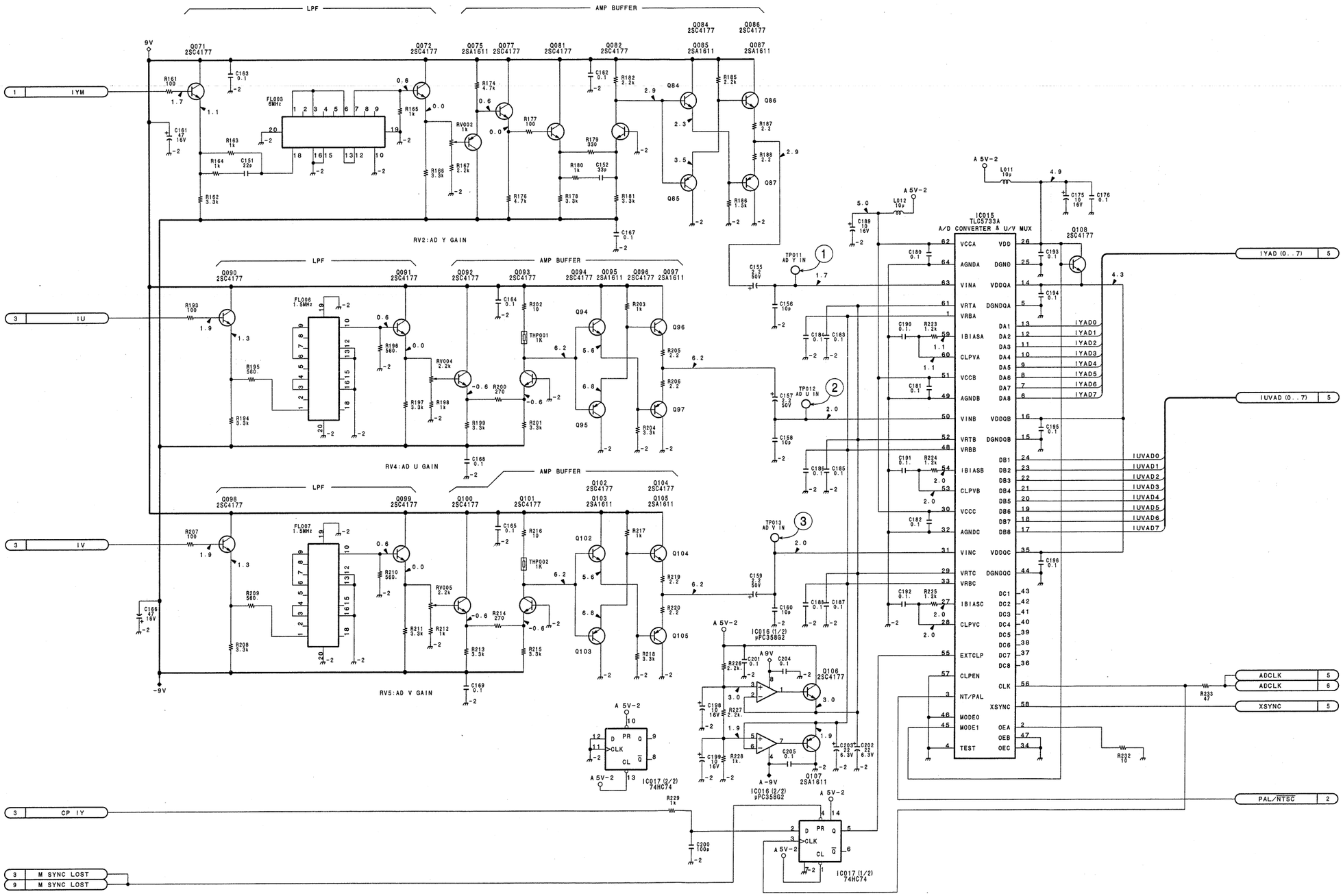


③ TP13/DAD-31P (E1)



9-18

VIDEO SIG NAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

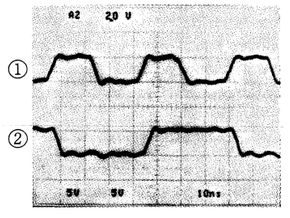


DAD-31/31P (4/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

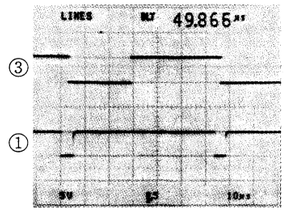
DAD-31/31P (5/9)

For NTSC (DAD-31)

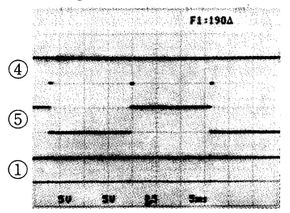
① TP14/DAD-31 (C4)
② TP15/DAD-31 (C4)



③ TP16/DAD-31 (C4)
① IC3-13 pin/DAD-31 (E2)
Page 9-17

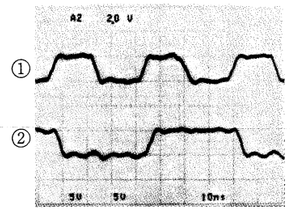


④ TP17/DAD-31 (C3)
⑤ TP18/DAD-31 (C4)
① IC3-13 pin/DAD-31 (E2)
Page 9-17

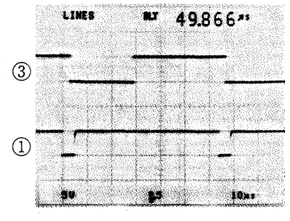


For PAL (DAD-31P)

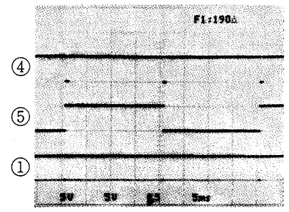
① TP14/DAD-31P (C4)
② TP15/DAD-31P (C4)



③ TP16/DAD-31P (C4)
① IC3-13 pin/DAD-31P (E2)
Page 9-17

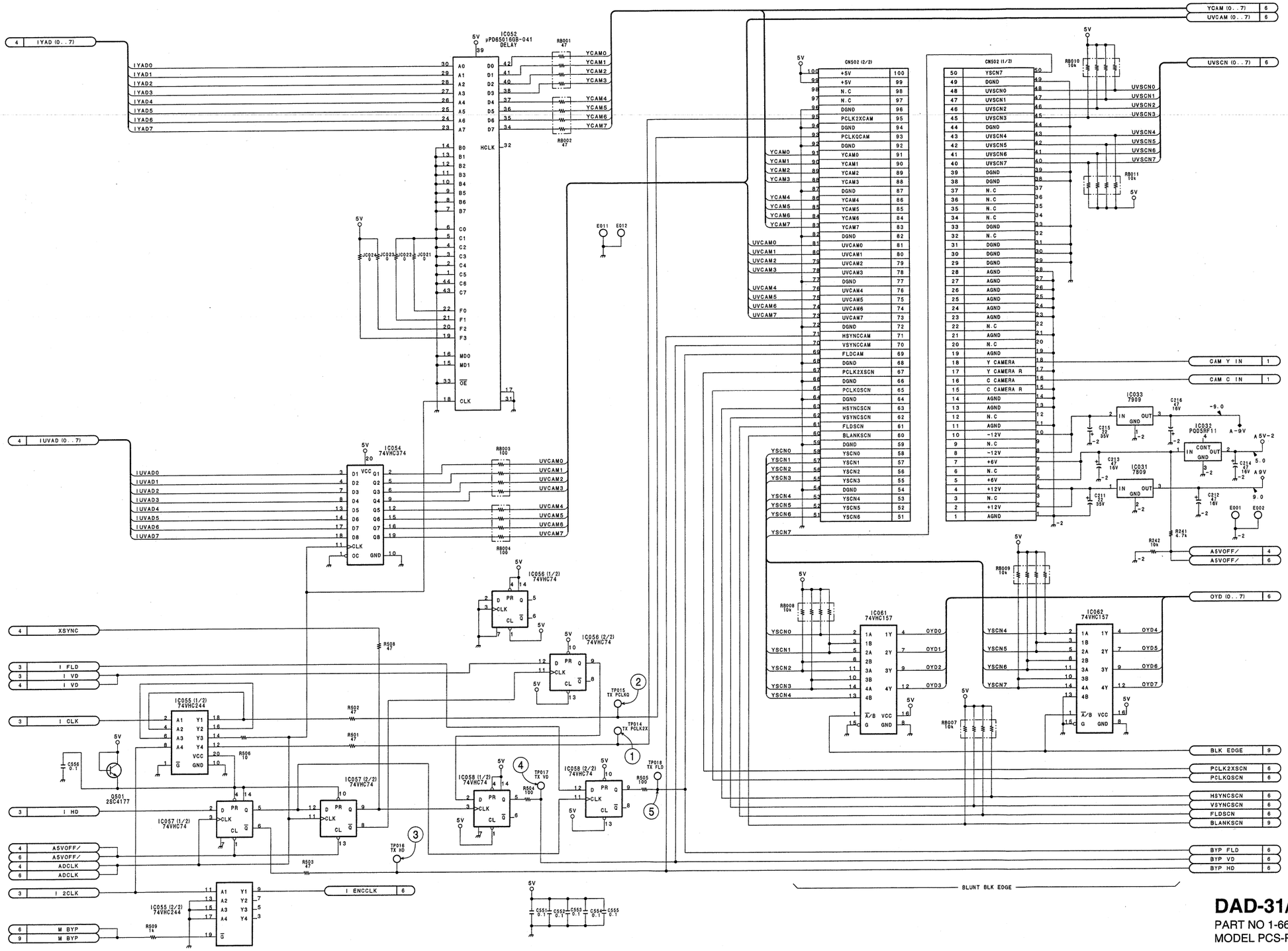


④ TP17/DAD-31P (C3)
⑤ TP18/DAD-31P (C4)
① IC3-13 pin/DAD-31P (E2)
Page 9-17



DAD-31/31P (5/9)

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL



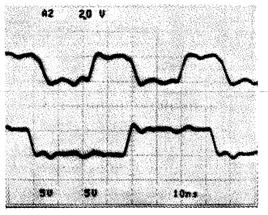
DAD-31/31P (5/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

9-21

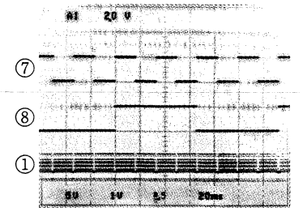
DAD-31/31P (6/9)

For NTSC (DAD-31)

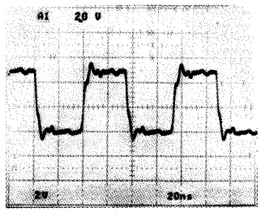
① CN502-95 (R511)/DAD-31 (E5)
② TP19/DAD-31 (E5)



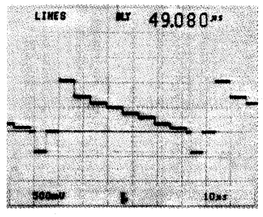
⑦ IC18-52 pin/DAD-31 (F3)
⑧ IC80-9 pin/DAD-31 (D4)
① TP22/DAD-31 (H4) Page 9-25



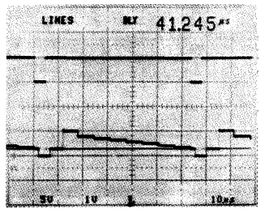
③ IC76-4 pin/DAD-31 (E4)



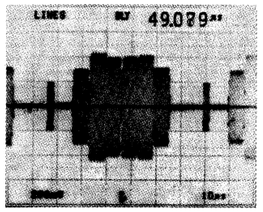
⑨ TP20/DAD-31 (F3)



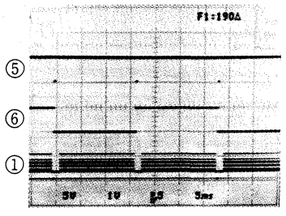
④ IC76-7 pin/DAD-31 (E4)
① TP22/DAD-31 (H4) Page 9-25



⑩ TP21/DAD-31 (F3)

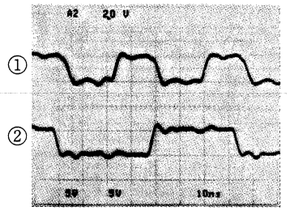


⑤ IC76-9 pin/DAD-31 (E4)
⑥ IC76-12 pin/DAD-31 (E4)
① TP22/DAD-31 (H4) Page 9-25

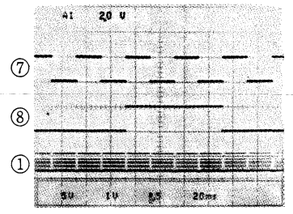


For PAL (DAD-31P)

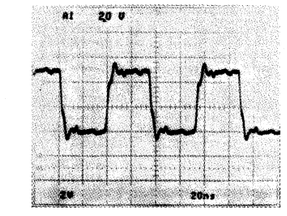
① CN502-95 (R511)/DAD-31P (E5)
② TP19/DAD-31P (E5)



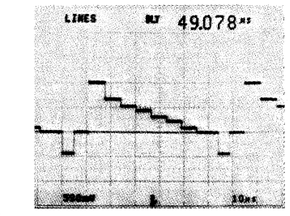
⑦ IC18-52 pin/DAD-31P (F3)
⑧ IC80-9 pin/DAD-31P (D4)
① TP22/DAD-31P (H4) Page 9-25



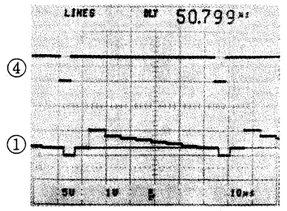
③ IC76-4 pin/DAD-31P (E4)



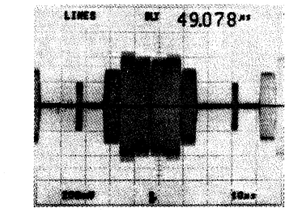
⑨ TP20/DAD-31P (F3)



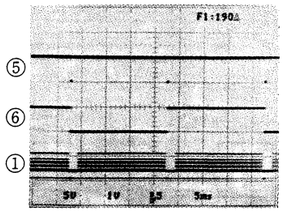
④ IC76-7 pin/DAD-31P (E4)
① TP22/DAD-31P (H-4) Page 9-25



⑩ TP21/DAD-31P (F3)

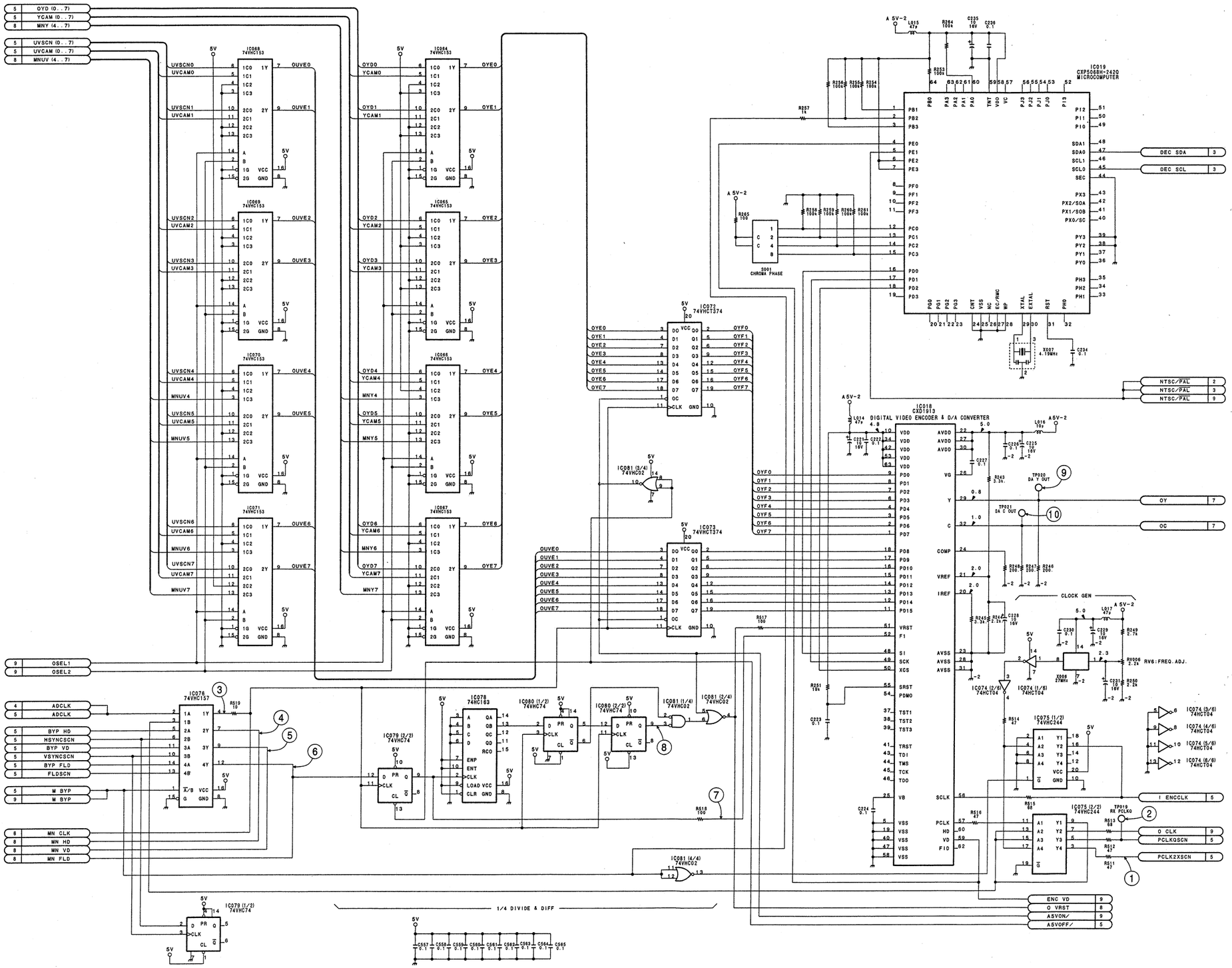


⑤ IC76-9 pin/DAD-31P (E4)
⑥ IC76-12 pin/DAD-31P (E4)
① TP22/DAD-31P (H4) Page 9-25



9-22

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL

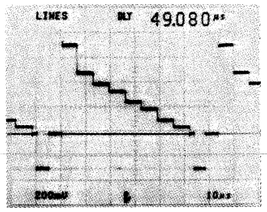


DAD-31/31P (6/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

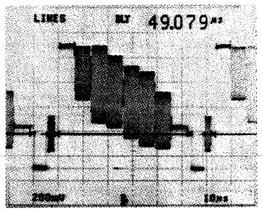
DAD-31/31P (7/9)

For NTSC (DAD-31)

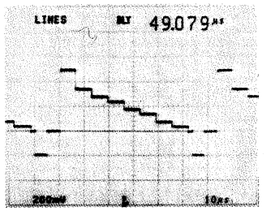
① TP22/DAD-31 (H4)



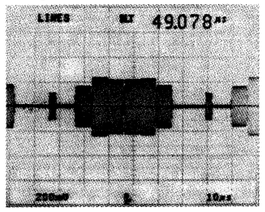
⑤ TP24/DAD-31 (H3)



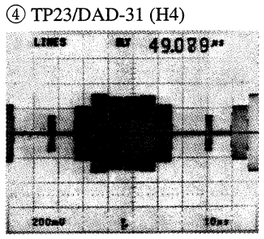
② Q112-E/DAD-31 (G4)



③ Q122-E/DAD-31 (G4)

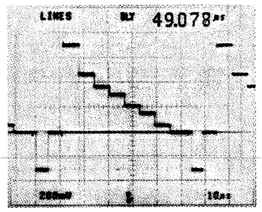


④ TP23/DAD-31 (H4)

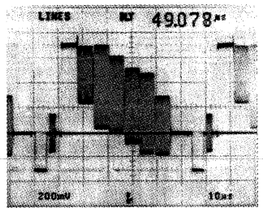


For PAL (DAD-31P)

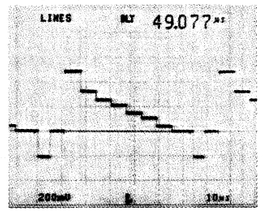
① TP22/DAD-31P (H4)



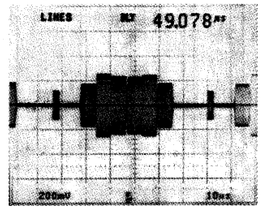
⑤ TP24/DAD-31P (H3)



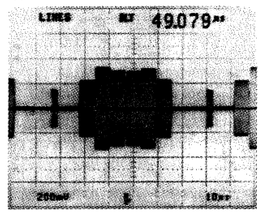
② Q112-E/DAD-31P (G4)



③ Q122-E/DAD-31P (G4)

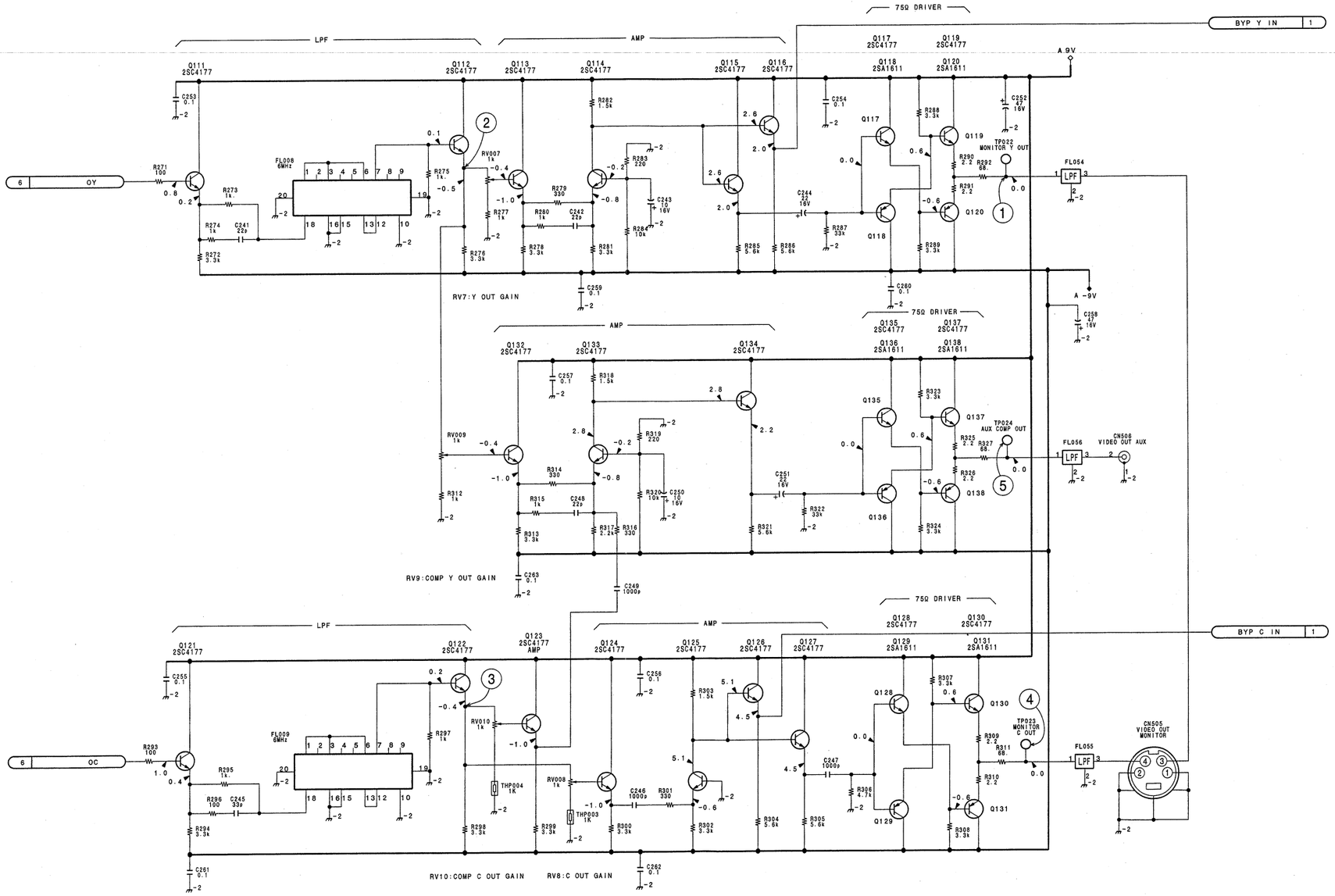


④ TP23/DAD-31P (H4)



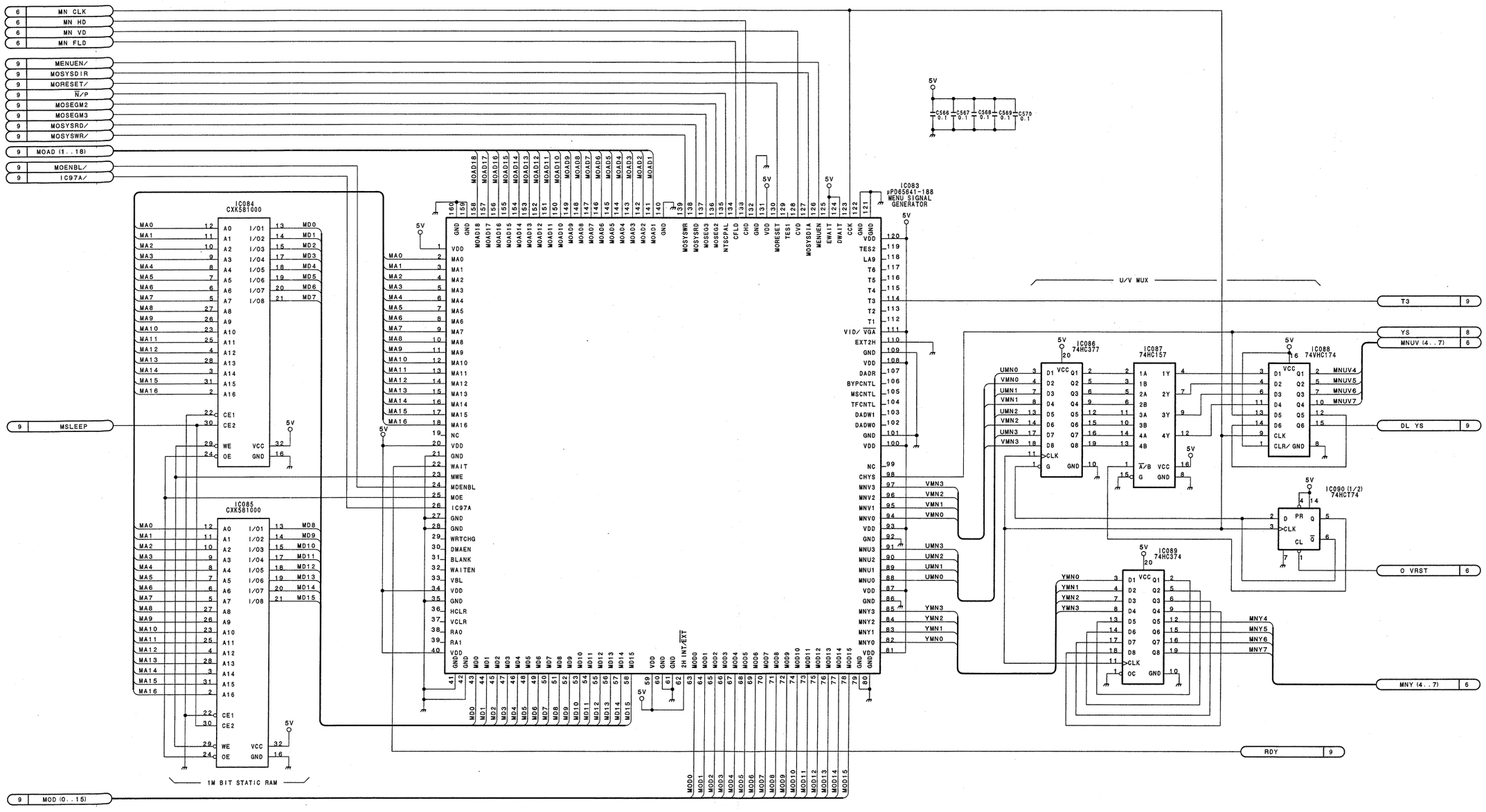
9-24

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL



DAD-31/31P (7/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

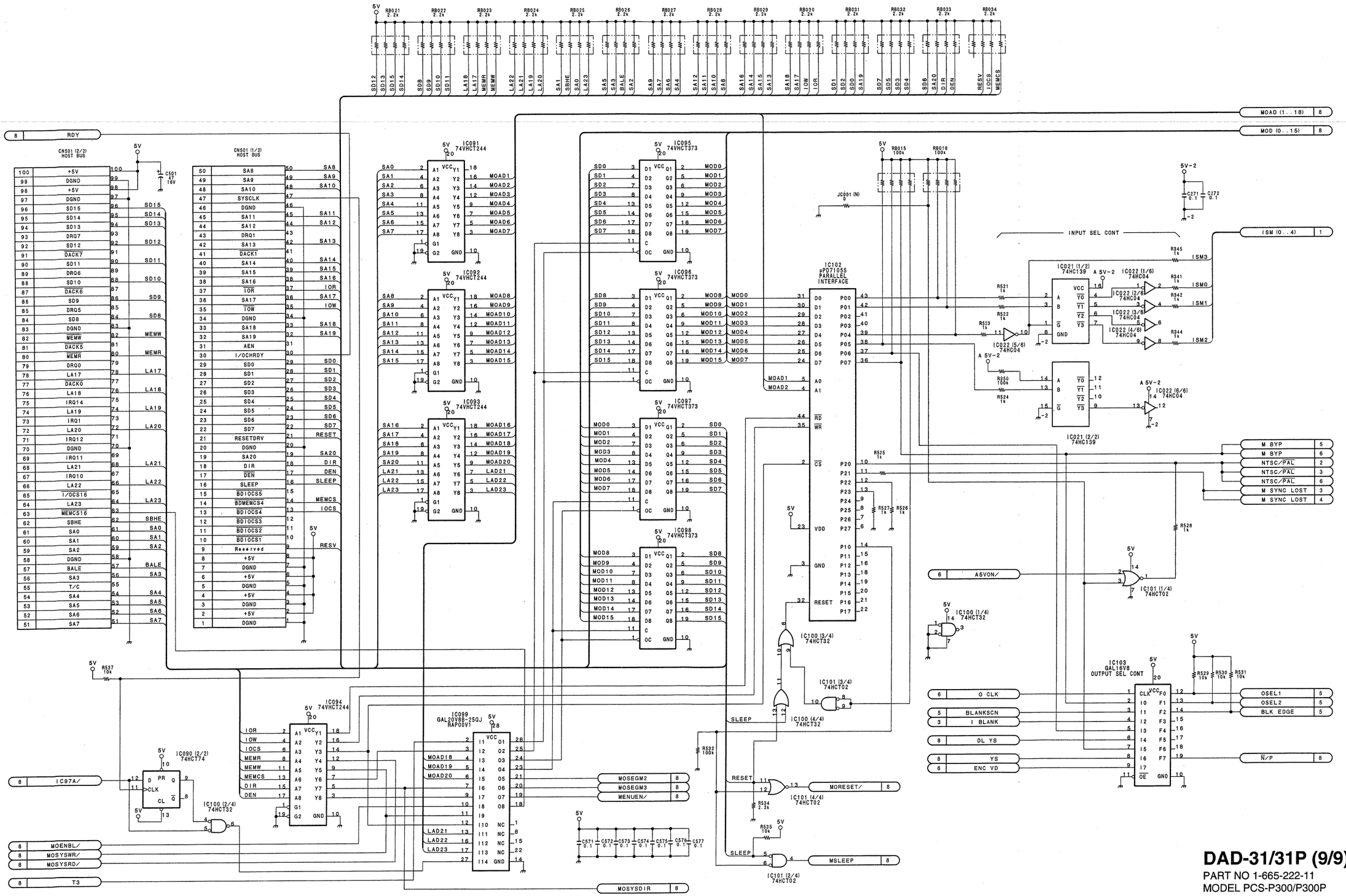
VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL



DAD-31/31P (8/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

DAD-31/31P (9/9)

VIDEO SIGNAL INPUT/OUTPUT AND MENU DISPLAY CONTROL



DAD-31/31P (9/9)
PART NO 1-665-222-11
MODEL PCS-P300/P300P

DPR-97 : VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER

DPR-97(1-665-221-11)
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*:B SIDE

CL101	A4	IC300	*B3	RB336	*F1
CL250	F5	IC301	D2	RB337	G1
CL251	H6	IC302	*D3	RB338	G1
CL252	G5	IC303	*D2	RB339	*E1
CL253	G5	IC304	*E2	RB340	*F1
CL254	H5	IC305	*E2	RB341	*E3
CL255	G5	IC310	D2	RB400	I4
CL256	G7	IC311	*D2	RB401	I3
		IC320	A2	RB402	I3
CN401	D7	IC321	*B2		
CN402	I7	IC330	D3	RV401	L4
CN403	M4	IC331	G2	RV402	K4
CN404	M6	IC332	G2	RV403	J5
CN405	M3	IC333	G3	RV404	K5
CN406	M2	IC334	*H2		
		IC335	E1	S330	H2
D330	D1	IC336	E1		
D331	D1	IC337	*G3	TP401	K4
D332	E1	IC354	*J2	TP402	L5
D333	E1	IC370	I3	TP403	L6
D334	E1	IC371	I2	TP404	K5
D335	E1	IC372	*I3		
D336	E1	IC373	*F2	X200	E6
D337	E1	IC400	J3	X300	C3
D338	E1	IC401	J1	X330	F3
D339	E1	IC402	*K1		
D340	F1	IC403	*K2		
D341	F1	IC404	*I6		
D342	F1	IC405	*I5		
D343	F1	IC406	*K3		
D344	F1	IC407	*L3		
D345	F1	IC408	*L5		
D401	L2	IC409	*J2		
D402	*L6	IC410	*J4		
D403	*L6	IC411	*J6		
D404	*K3	IC412	*L6		
D405	*K3	IC413	*L3		
D406	*J6				
D407	*J4	L401	*J1		
D408	L4				
D409	L4	Q100	C5		
D410	M6	Q300	*B3		
D411	L5	Q301	D2		
D412	*K6	Q402	*L1		
D413	*K6	Q403	*L5		
D414	*K7	Q404	*K6		
D415	*L7	Q405	*L6		
D416	*K7	Q406	*L6		
D417	*K6	Q407	*L6		
D418	L3	Q408	*L7		
D419	L2	Q409	*L7		
E101	A6	RB100	B3		
E201	A3	RB101	B3		
E301	E7	RB102	*B3		
E401	M3	RB103	*C4		
E402	I4	RB200	E6		
		RB201	*D5		
FL400	L4	RB202	F6		
FL401	L6	RB203	E6		
FL402	L3	RB204	F5		
FL403	L2	RB205	*I4		
		RB250	*G7		
IC100	C4	RB251	H6		
IC101	*B4	RB252	H6		
IC102	*B6	RB253	I6		
IC103	*B5	RB254	I6		
IC104	*C5	RB255	H6		
IC105	*C3	RB256	H6		
IC106	*C5	RB257	I6		
IC200	D6	RB258	I6		
IC201	*D7	RB300	D3		
IC202	*D4	RB301	D3		
IC203	*E4	RB310	C1		
IC204	*E6	RB311	D1		
IC205	*F4	RB312	C1		
IC206	*F6	RB313	C1		
IC207	*I4	RB314	C3		
IC251	*G5	RB320	B2		
IC252	F6	RB321	B1		
IC253	*H6	RB322	B2		
IC254	*I6	RB323	B1		
IC255	G5	RB324	B3		
IC256	H6	RB325	*B2		
IC257	F6	RB330	D3		
IC258	H5	RB331	*H2		
IC259	I5	RB332	*H2		
IC260	H5	RB333	*E1		
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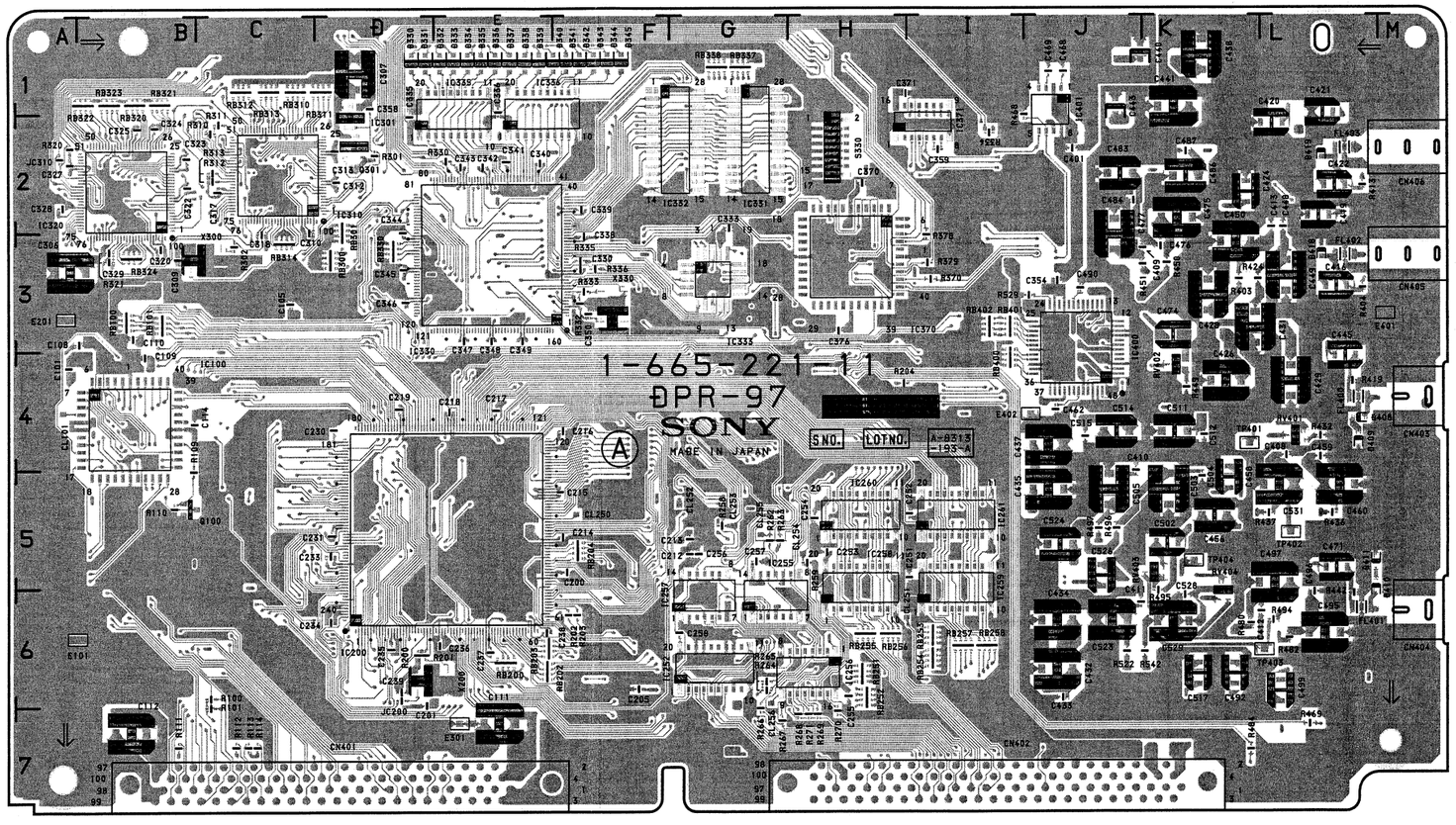
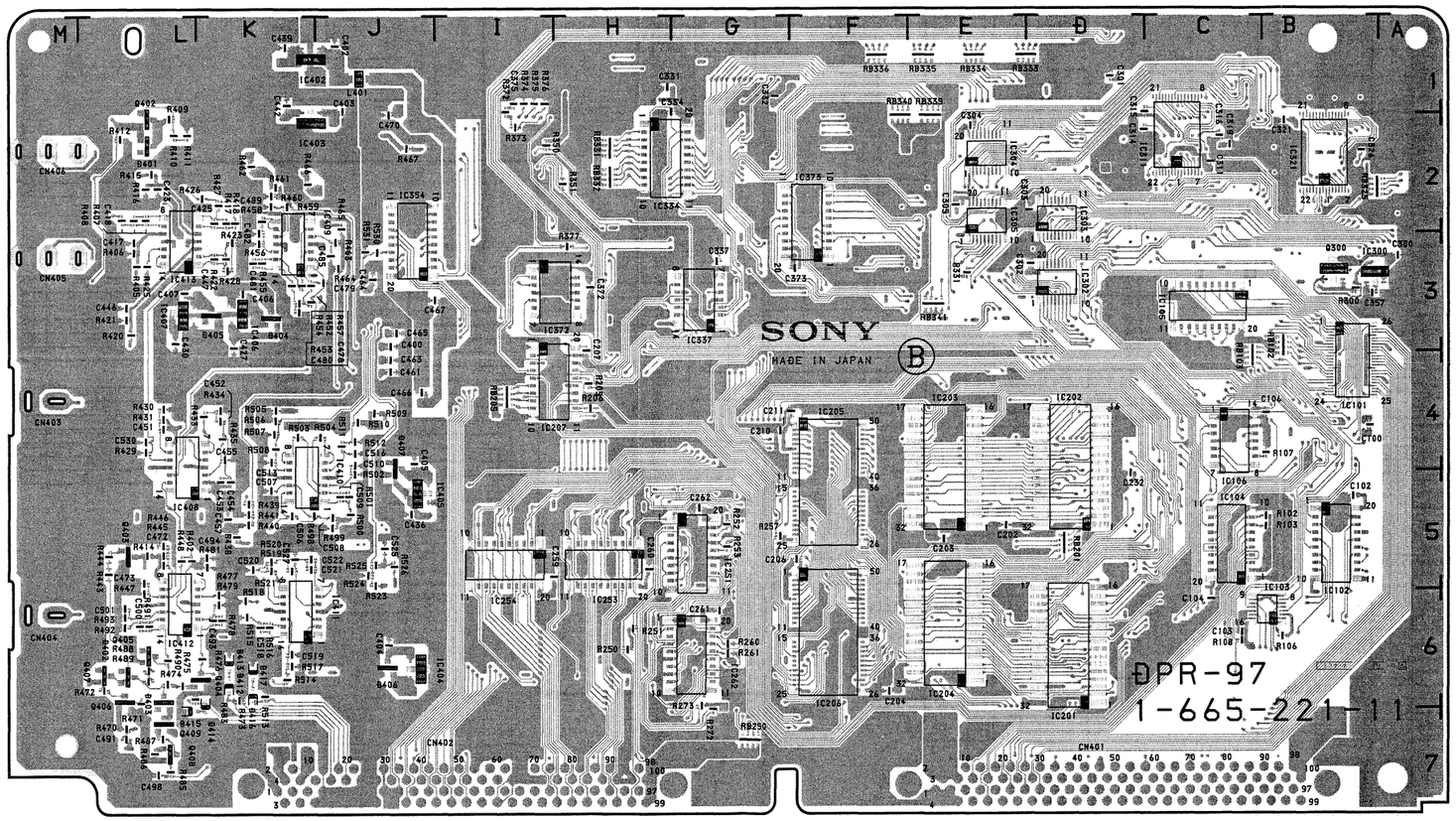
IC262	*G6	RB335	*E1		

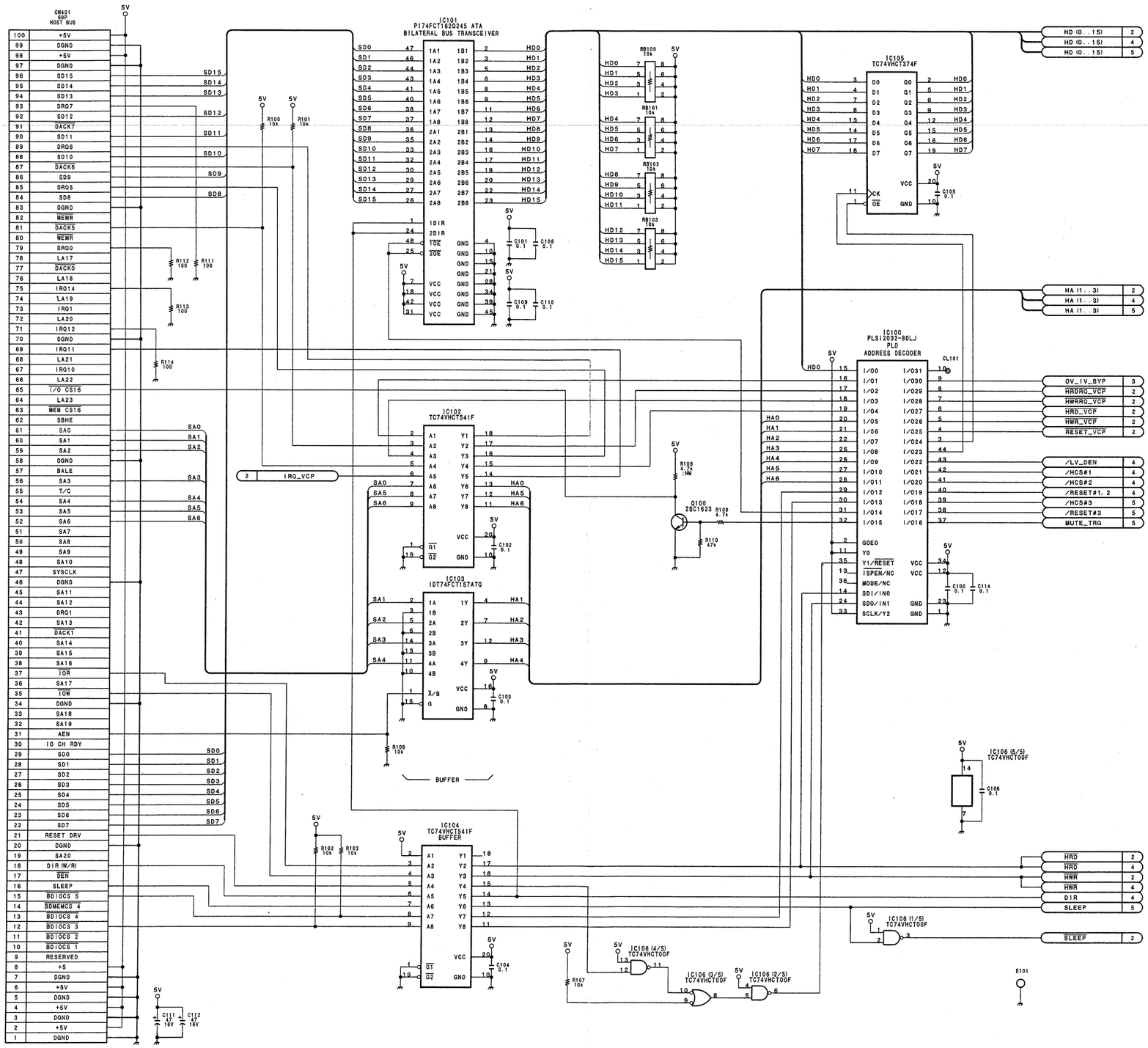


DPR-97 -A SIDE-
PART NO 1-665-221-11
MODEL PCS-P300/P300P



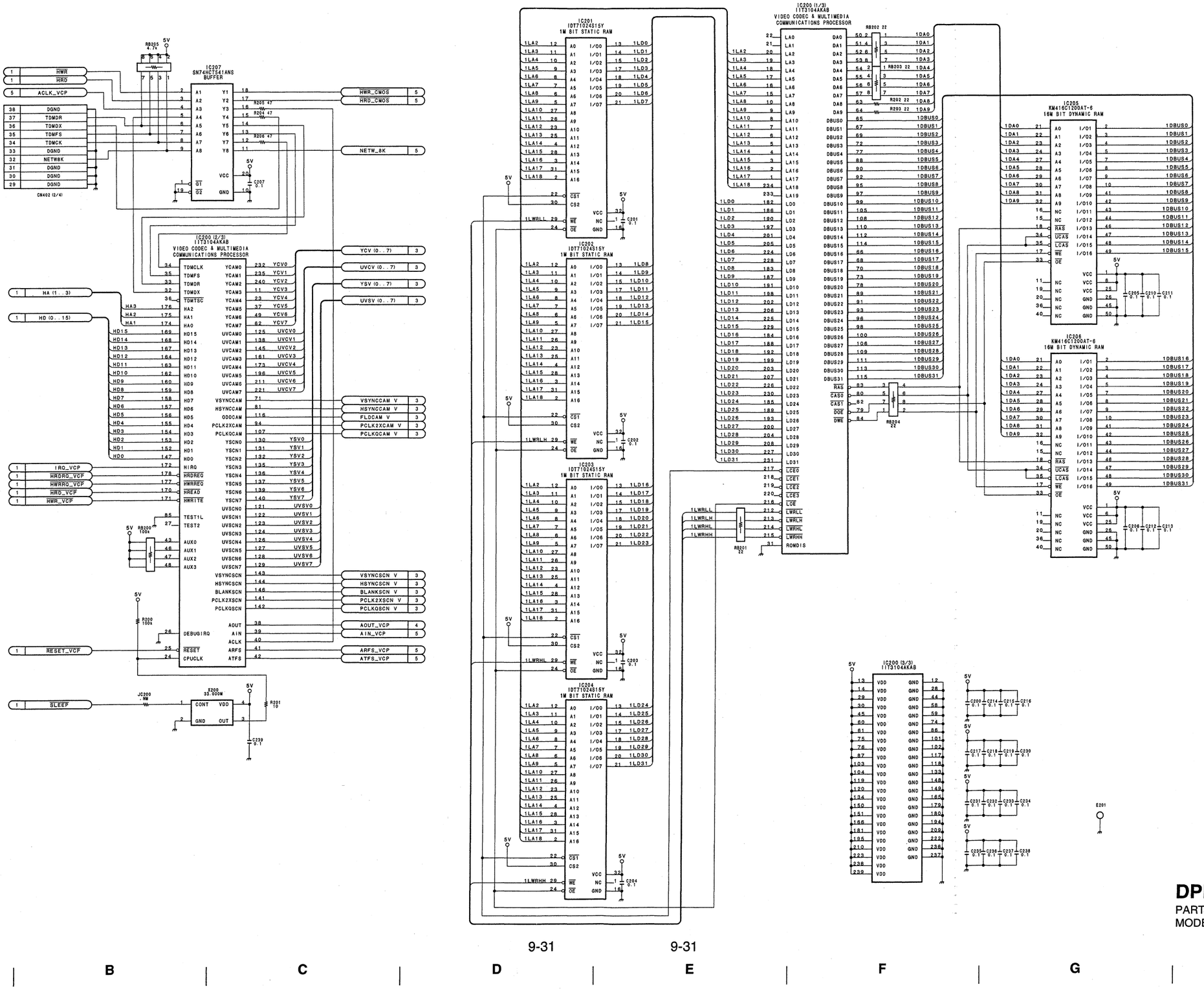
DPR-97 -B SIDE-
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



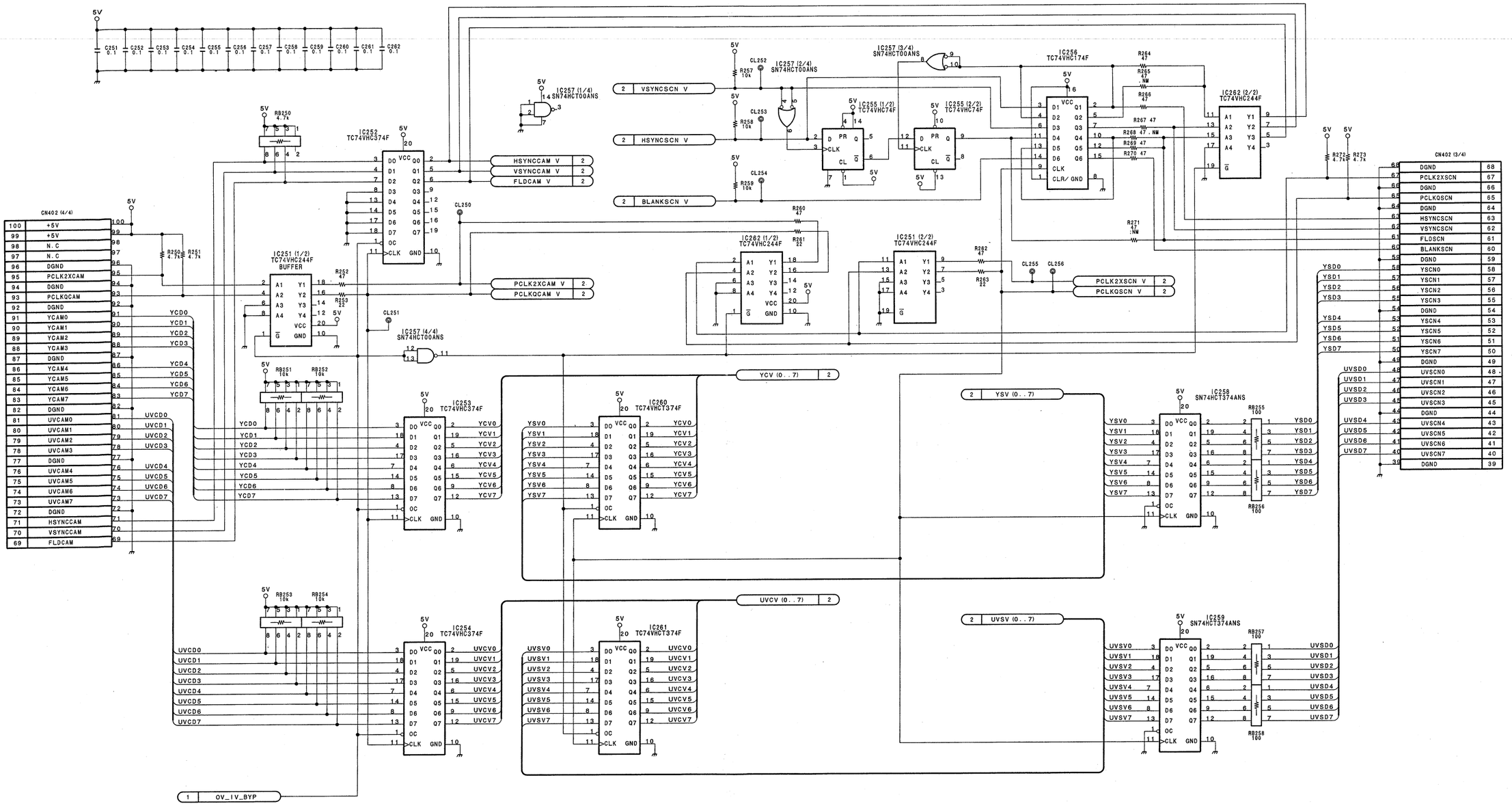
DPR-97 (1/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



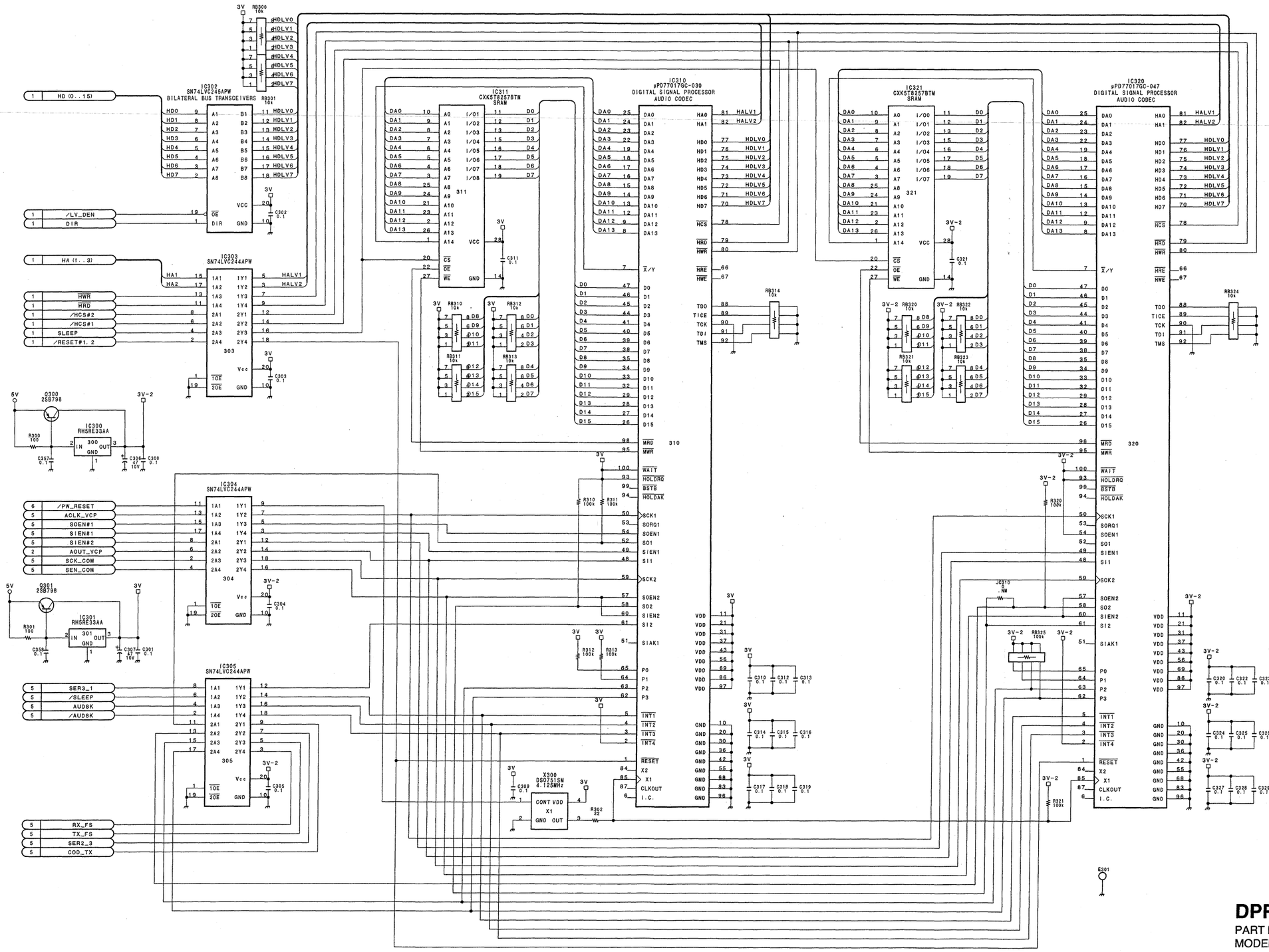
DPR-97 (2/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



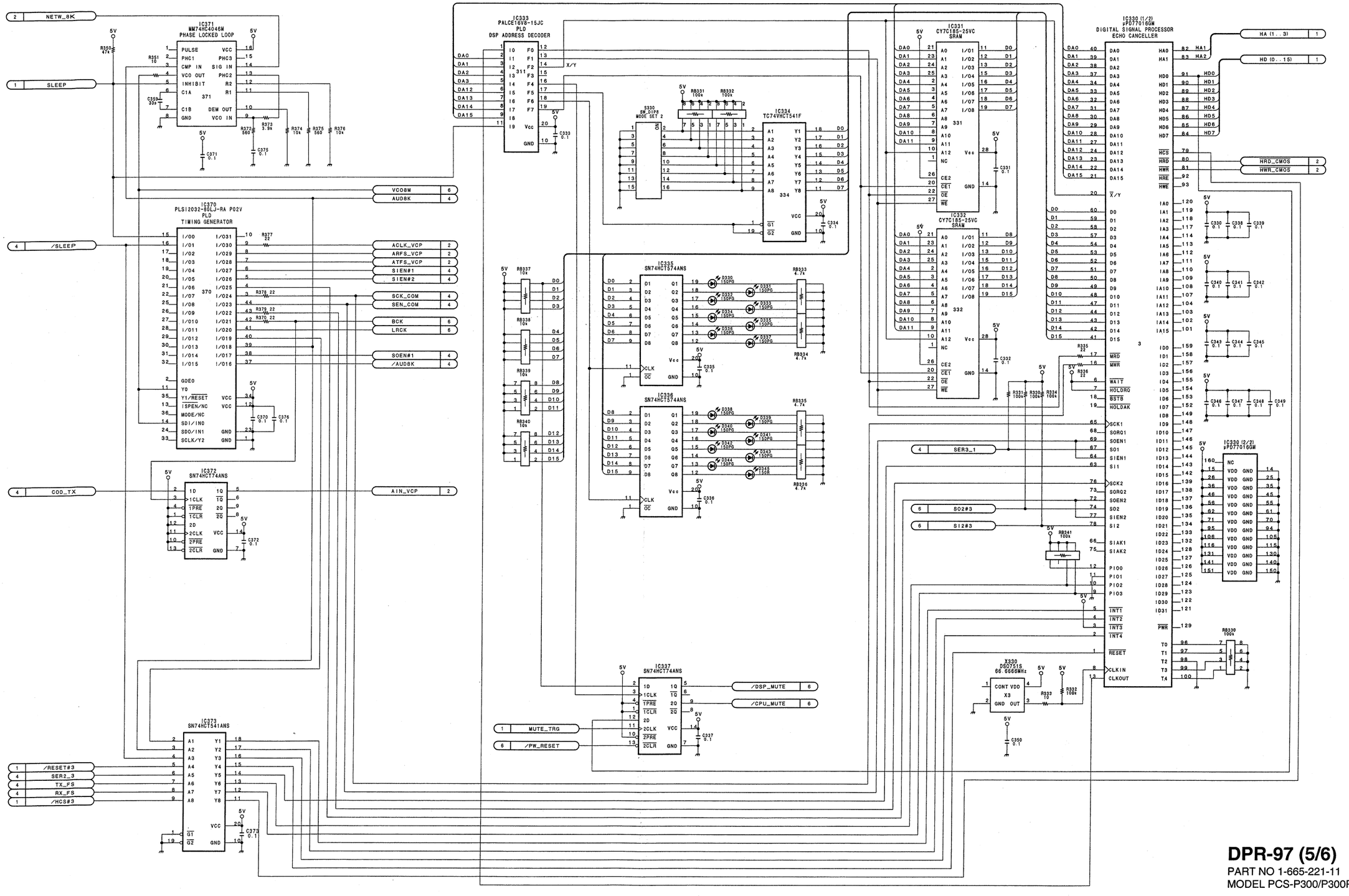
DPR-97 (3/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



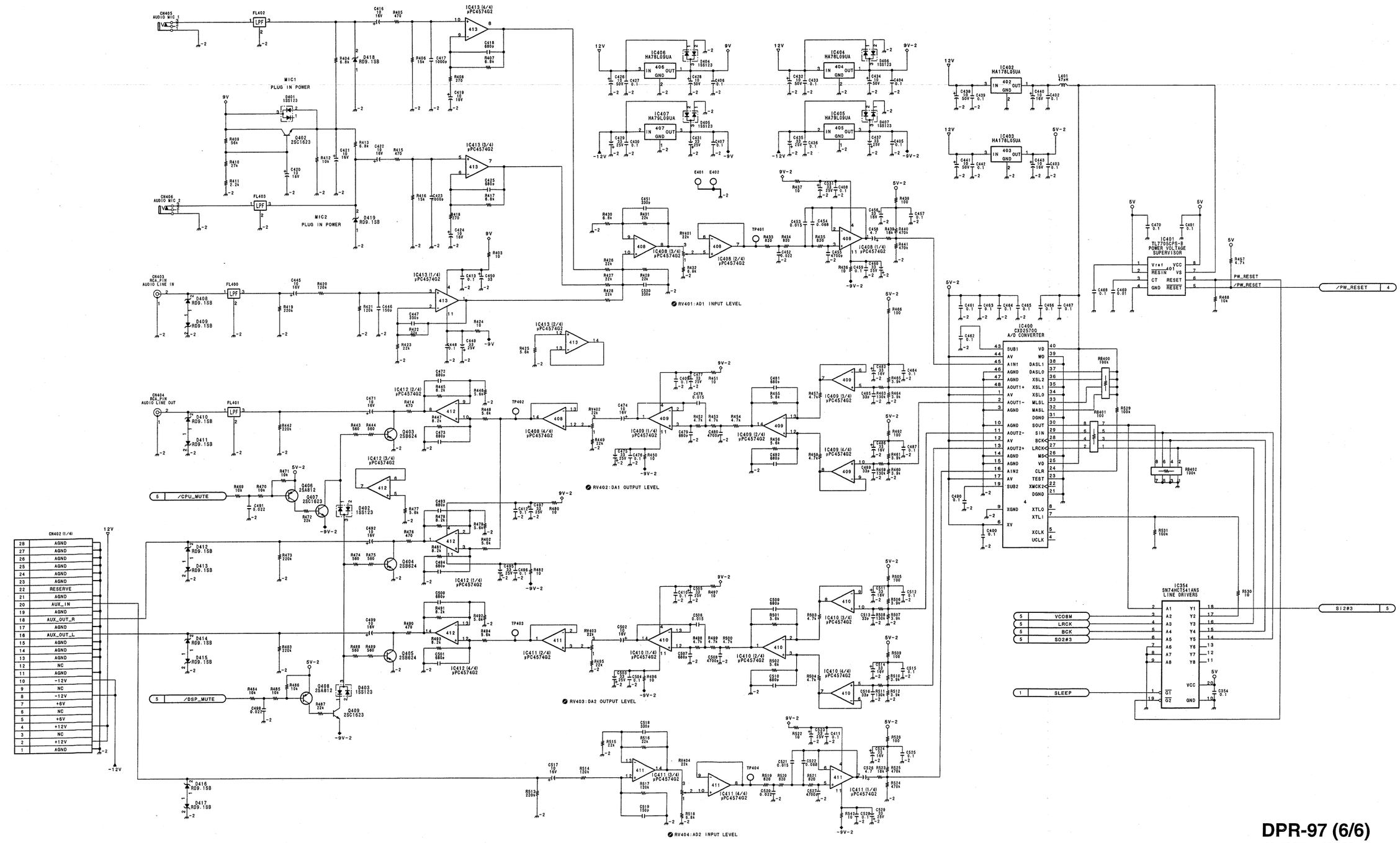
DPR-97 (4/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



DPR-97 (5/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

VIDEO IMAGE AUDIO CODEC AND ECHO CANCELLER



DPR-97 (6/6)
PART NO 1-665-221-11
MODEL PCS-P300/P300P

IF-664 : ISDN BRI LINE INTERFACE
IF-664A : BRI

IF-664/IF-664A(1-665-220-11)
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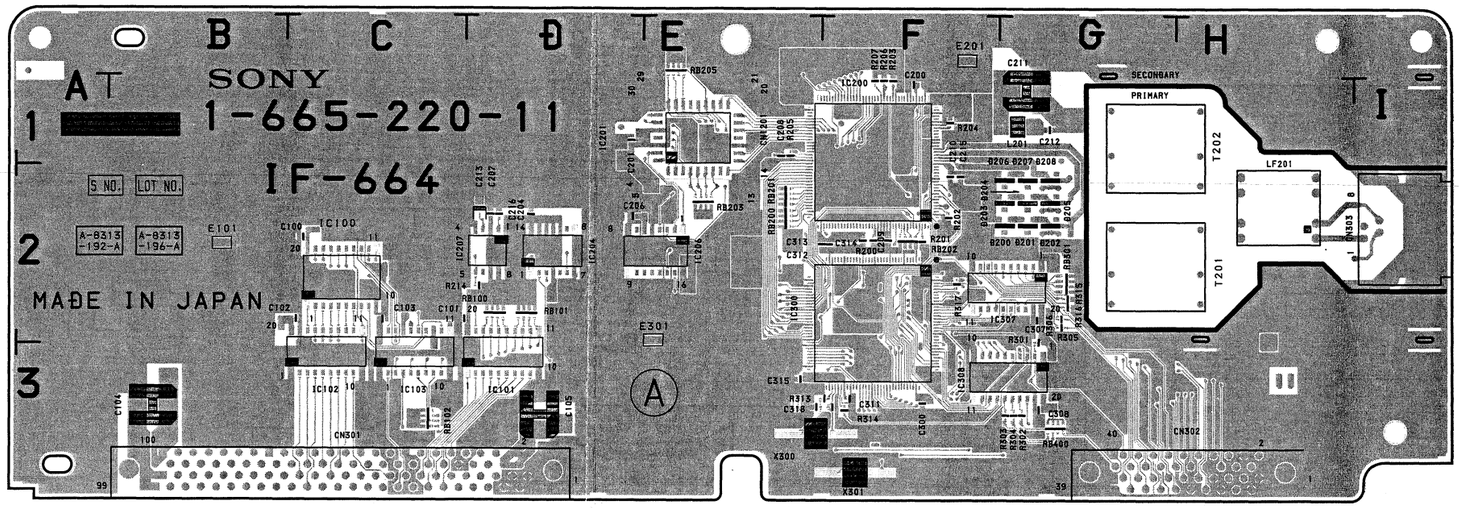
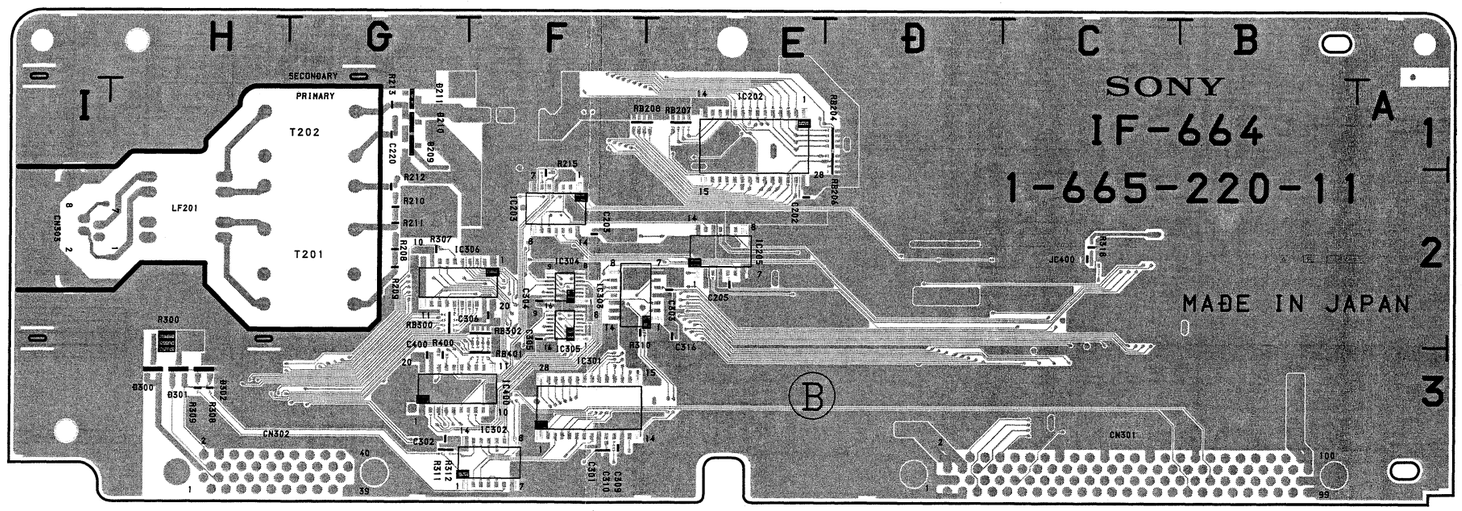
*:B SIDE

CN301	C3
CN302	H3
CN303	H2
CNI201	E1
D200	F2
D201	G2
D202	G2
D203	F2
D204	F2
D205	G2
D206	F1
D207	G1
D208	G1
D209	*G1
D210	*G1
D211	*G1
D300	*H3
D301	*H3
D302	*H3
E101	B2
E201	F1
E301	E2
IC100	C2
IC101	D3
IC102	C3
IC103	C3
IC200	F1
IC201	D1
IC202	*E1
IC203	*F2
IC204	D2
IC205	*E2
IC206	E2
IC207	C2
IC300	E2
IC301	*F3
IC302	*F3
IC303	*F2
IC304	*F2
IC305	*F3
IC306	*G2
IC307	F2
IC308	F3
IC400	*F3
L201	G1
LF201	H1
RB100	D2
RB101	D2
RB102	C3
RB200	E2
RB201	E2
RB202	F2
RB203	E2
RB204	*D1
RB205	E1
RB206	*F1
RB207	*E1
RB208	*D2
RB300	*G2
RB301	G2
RB302	*F2
RB400	G3
RB401	*F3
T201	H2
T202	H1
X300	E3
X301	F3



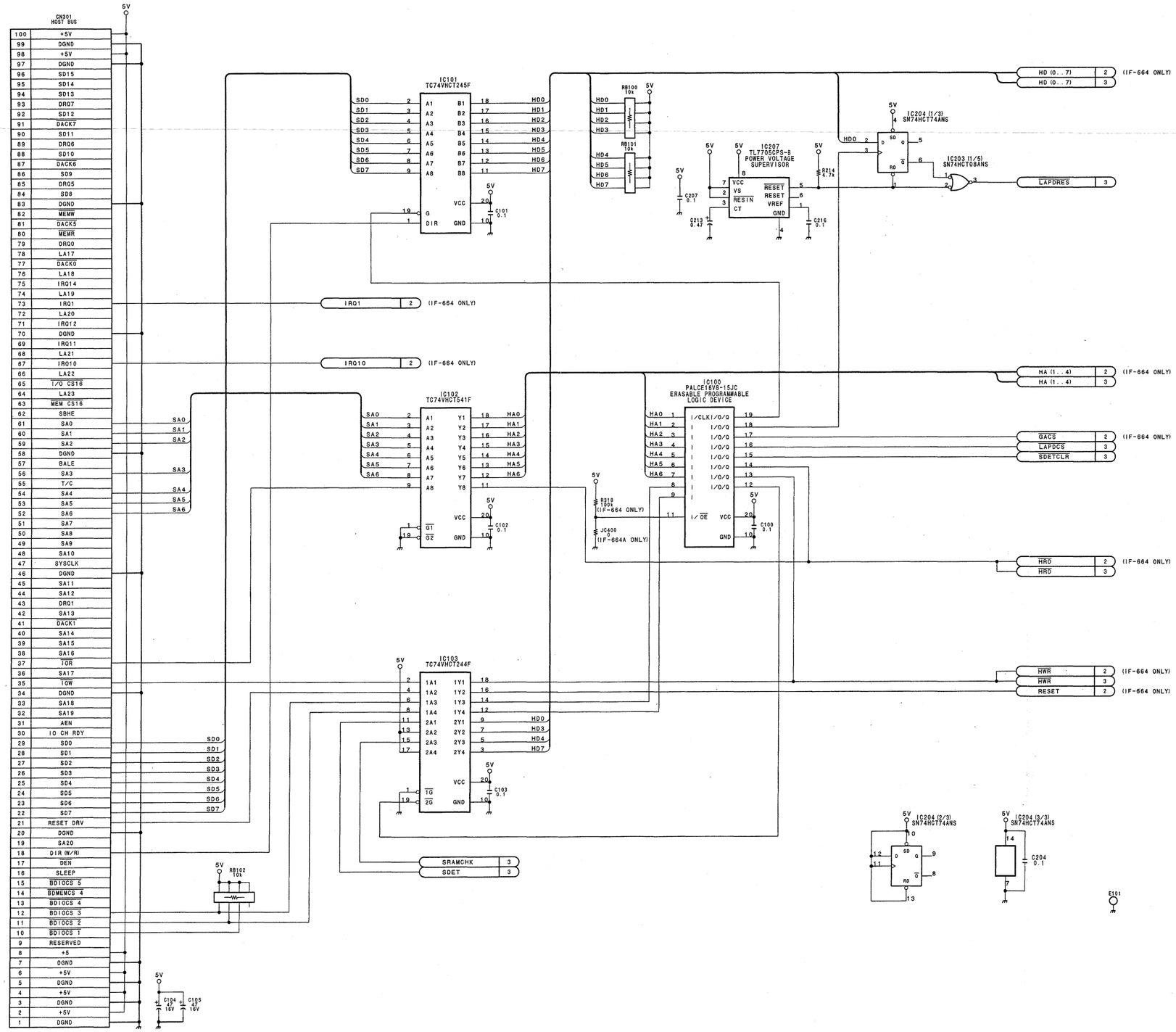
IF-664/IF-664A -A SIDE-
PART NO 1-665-220-11
MODEL PCS-P300/P300P
PCS-I300



IF-664/IF-664A -B SIDE-
PART NO 1-665-220-11
MODEL PCS-P300/P300P
PCS-I300

ISDN BRI LINE INTERFACE

BRI

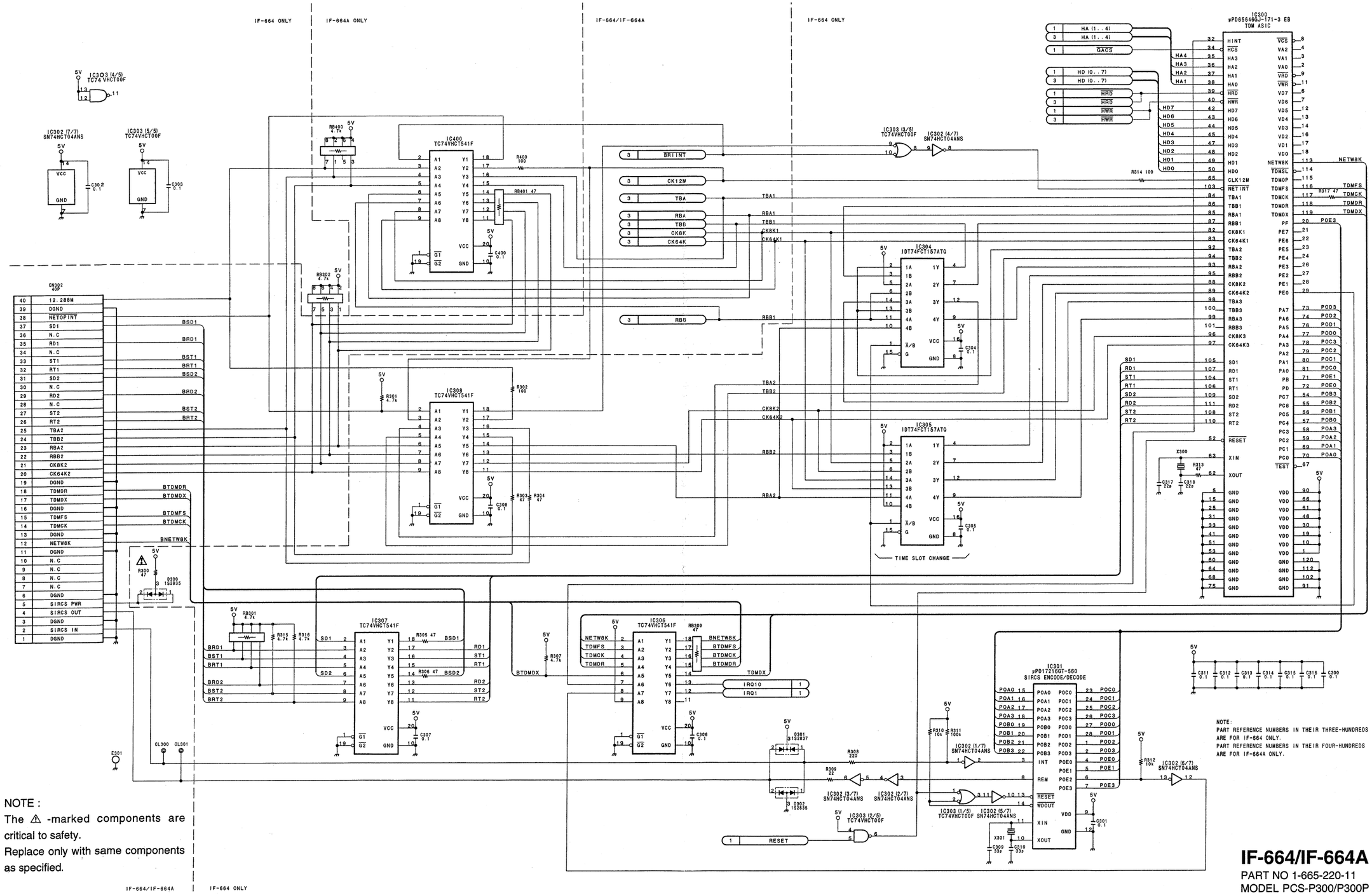


IF-664/IF-664A (1/3)

PART NO 1-665-220-11
MODEL PCS-P300/P300P
PCS-I300

ISDN BRI LINE INTERFACE

BRI



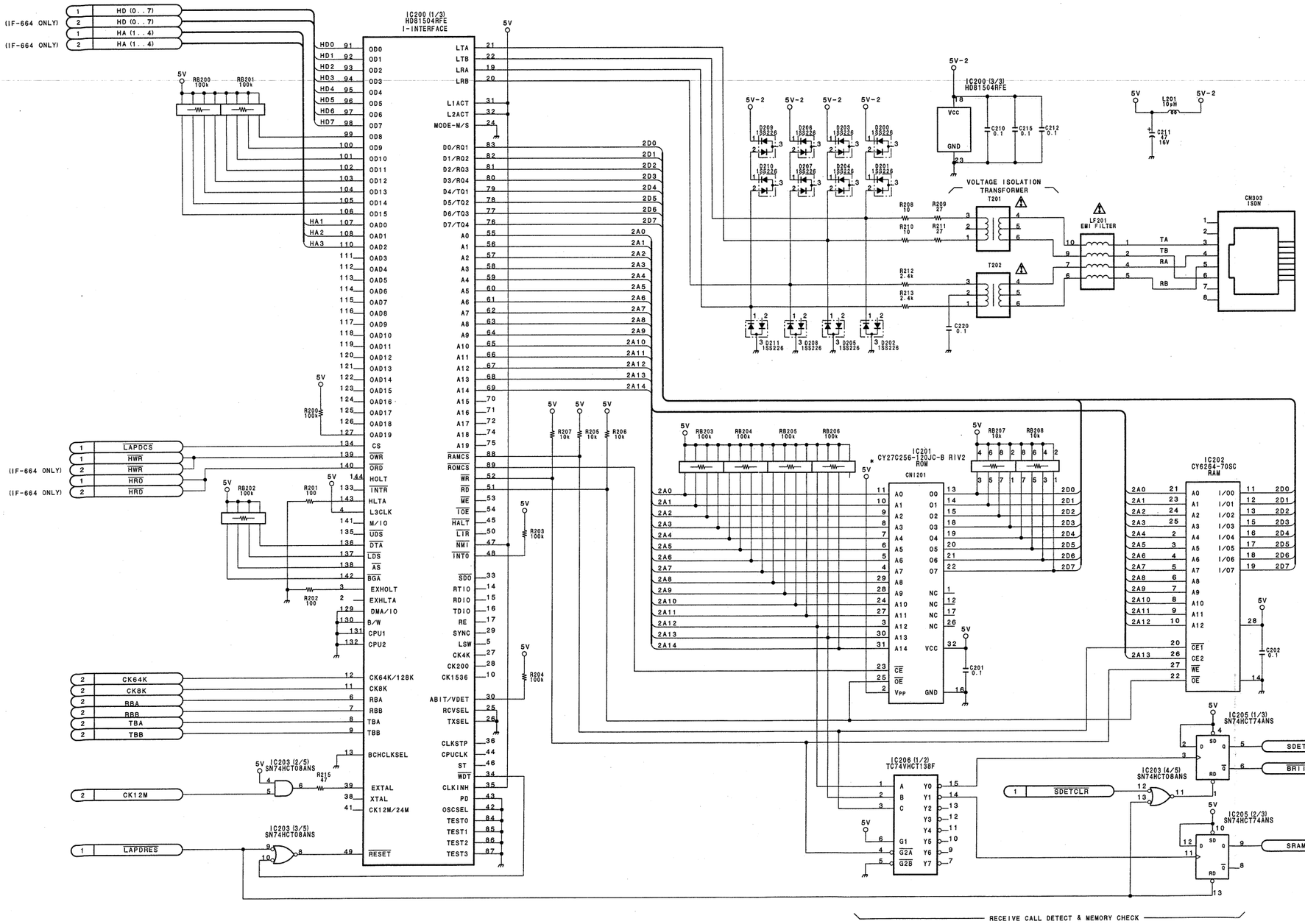
NOTE :
The ⚠ -marked components are critical to safety.
Replace only with same components as specified.

IF-664/IF-664A IF-664 ONLY

IF-664/IF-664A (2/3)
PART NO 1-665-220-11
MODEL PCS-P300/P300P
PCS-I300

ISDN BRI LINE INTERFACE

BRI



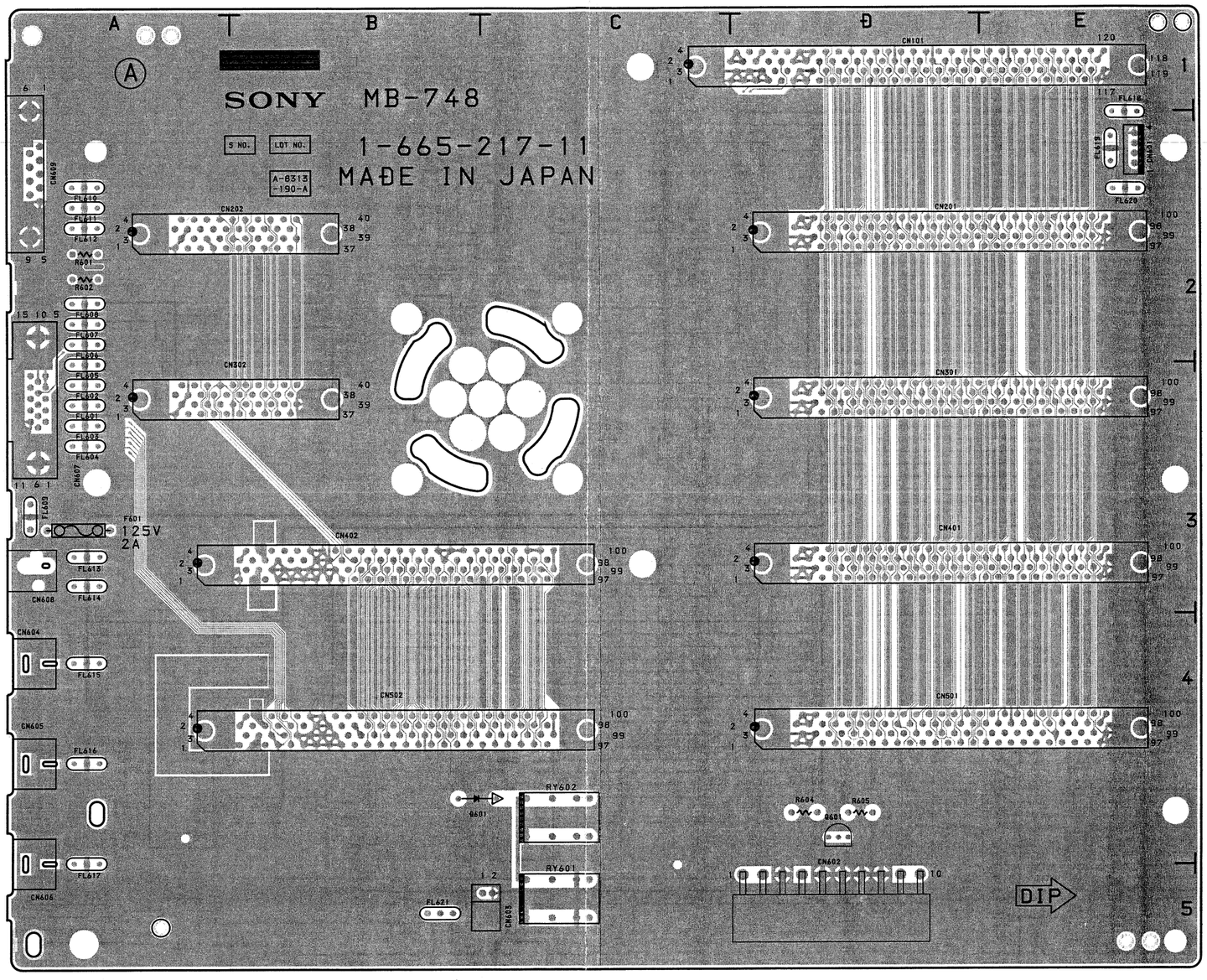
IF-664/IF-664A (3/3)

PART NO 1-665-220-11
MODEL PCS-P300/P300P
PCS-I300

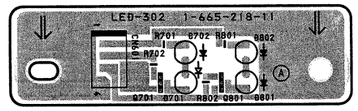
MB-748 : CONNECTORS
LED-302 : LED INDICATOR

MB-748(1-665-217-11)

CN101	D1
CN201	D2
CN202	B2
CN301	D3
CN302	B2
CN401	D3
CN402	B3
CN501	D4
CN502	B4
CN601	E2
CN602	D5
CN603	C5
CN604	A4
CN605	A4
CN606	A5
CN607	A3
CN608	A3
CN609	A2
D601	C4
F601	A3
FL601	A3
FL602	A3
FL603	A3
FL604	A3
FL605	A3
FL606	A2
FL607	A2
FL608	A2
FL609	A3
FL610	A2
FL611	A2
FL612	A2
FL613	A3
FL614	A3
FL615	A4
FL616	A4
FL617	A4
FL618	E1
FL619	E2
FL620	E2
FL621	B5
Q601	D4
RY601	C5
RY602	C4



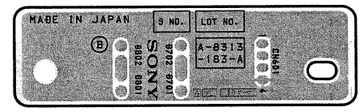
MB-748 -A SIDE-
PART NO 1-665-217-11
MODEL PCS-P300/P300P



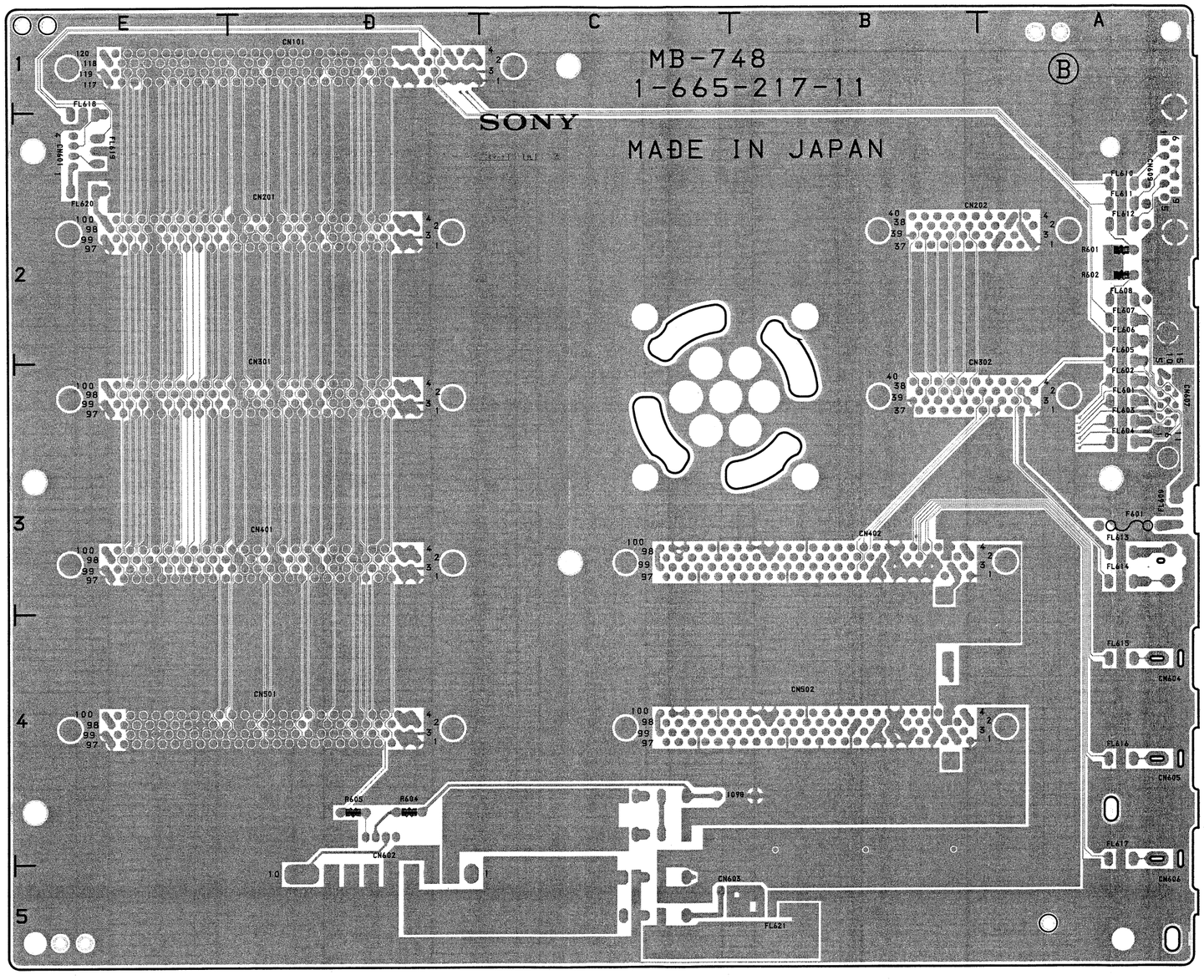
LED-302 -A SIDE-
PART NO 1-665-218-11
MODEL PCS-P300/P300P

LED-302(1-665-218-11)

CN601	A1
D701	A1
D702	A1
D703	A1
D704	A1
Q701	A1
Q801	A1

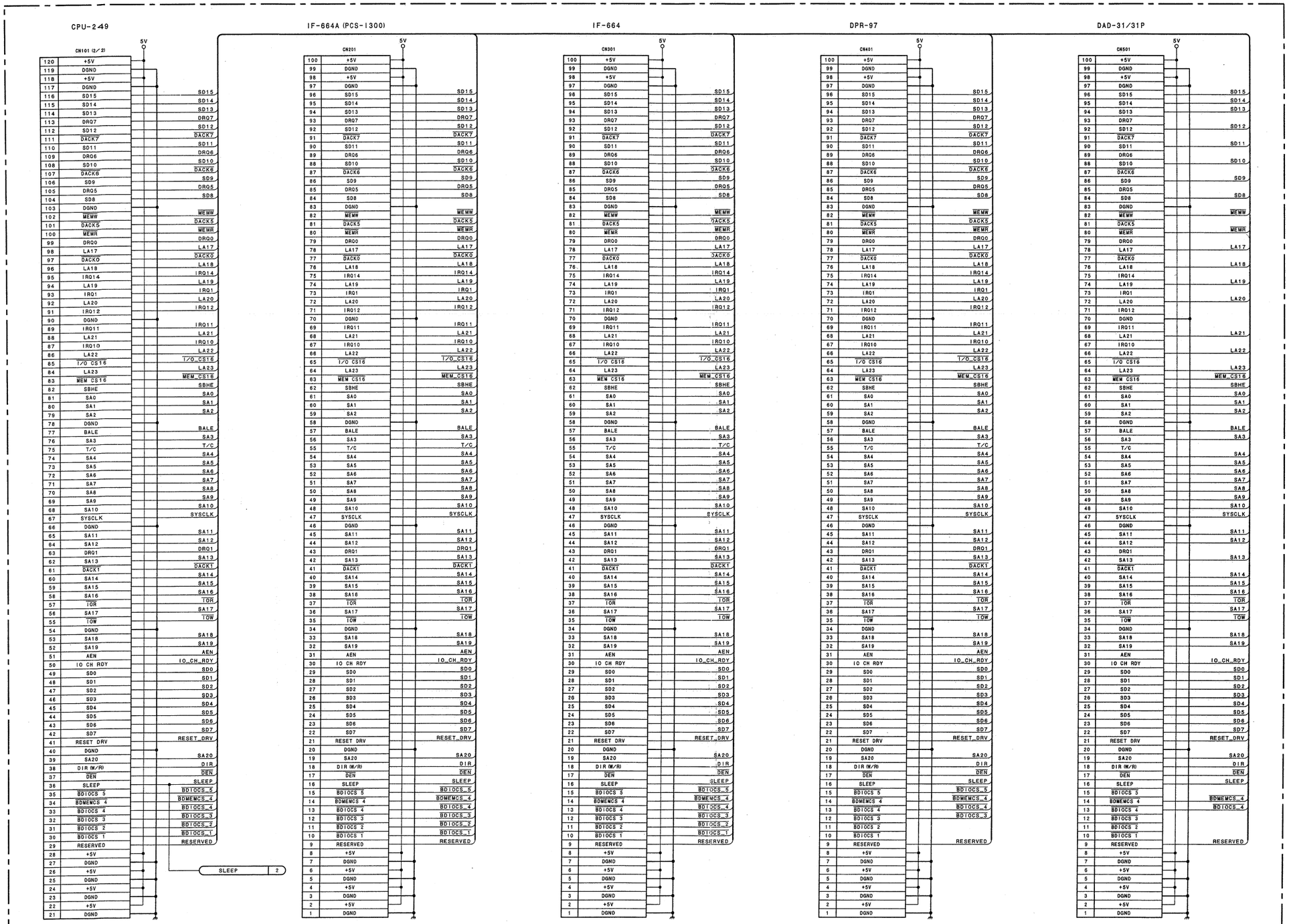


LED-302 -B SIDE-
PART NO 1-665-218-11
MODEL PCS-P300/P300P



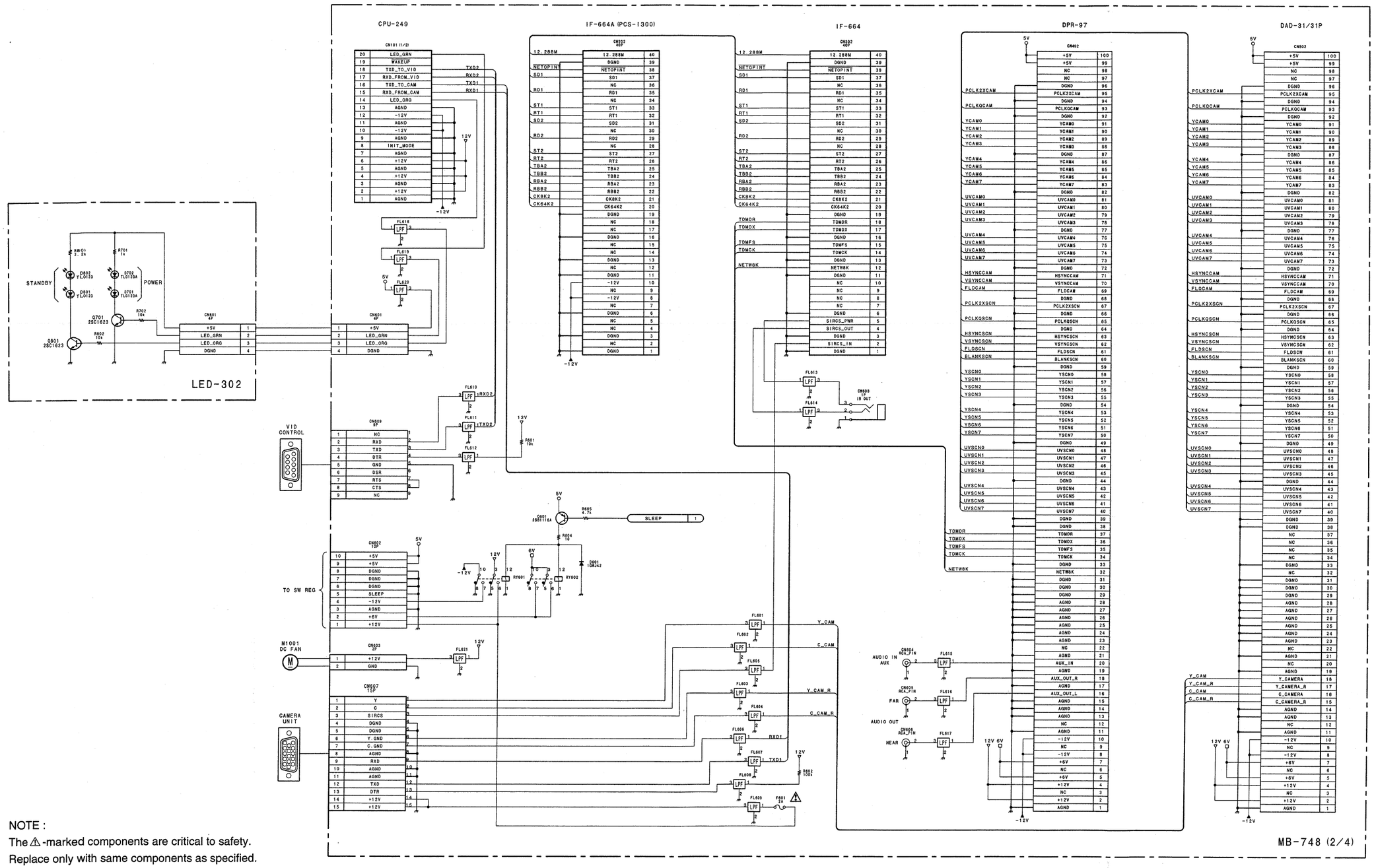
MB-748 -B SIDE-
PART NO 1-665-217-11
MODEL PCS-P300/P300P

CONNECTORS



MB-748 (1/4)
PART NO 1-665-217-11
MODEL PCS-P300/P300P

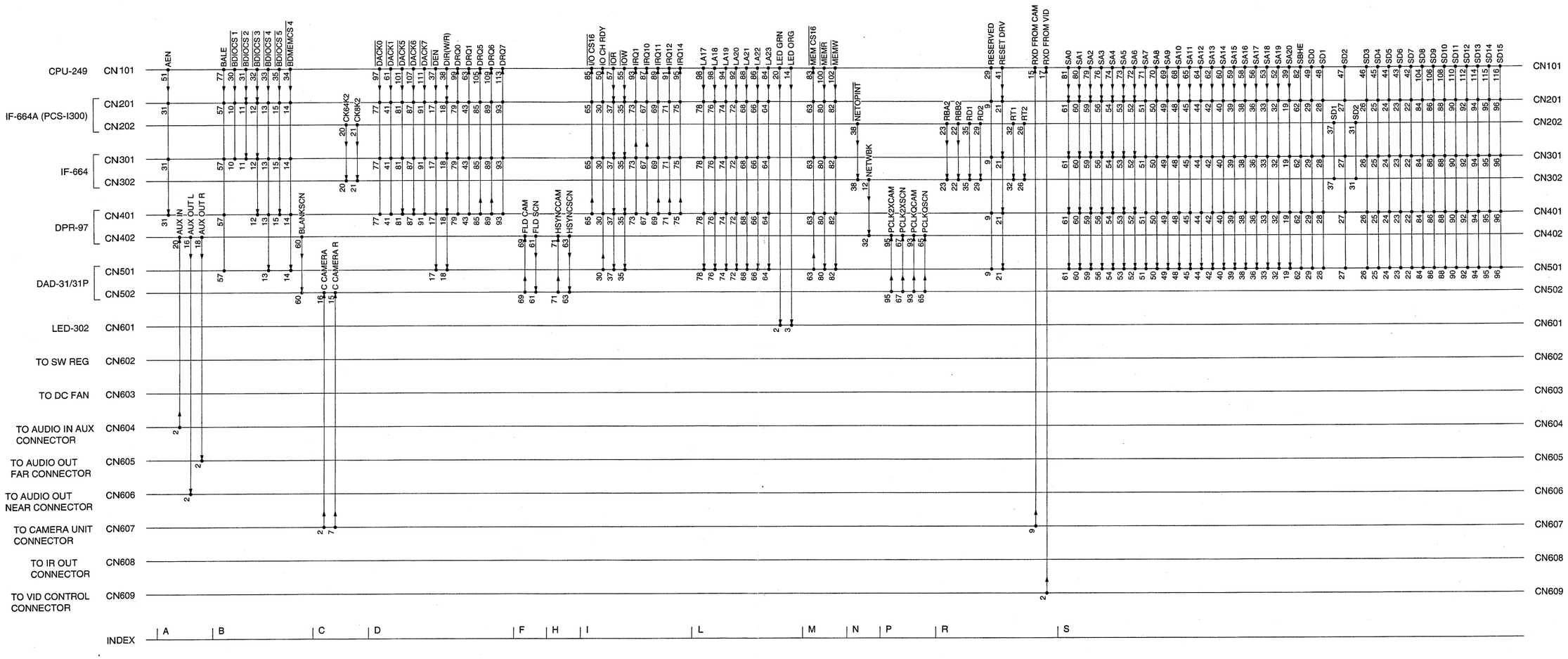
CONNECTORS
LED INDICATOR



NOTE :
The ⚠-marked components are critical to safety.
Replace only with same components as specified.

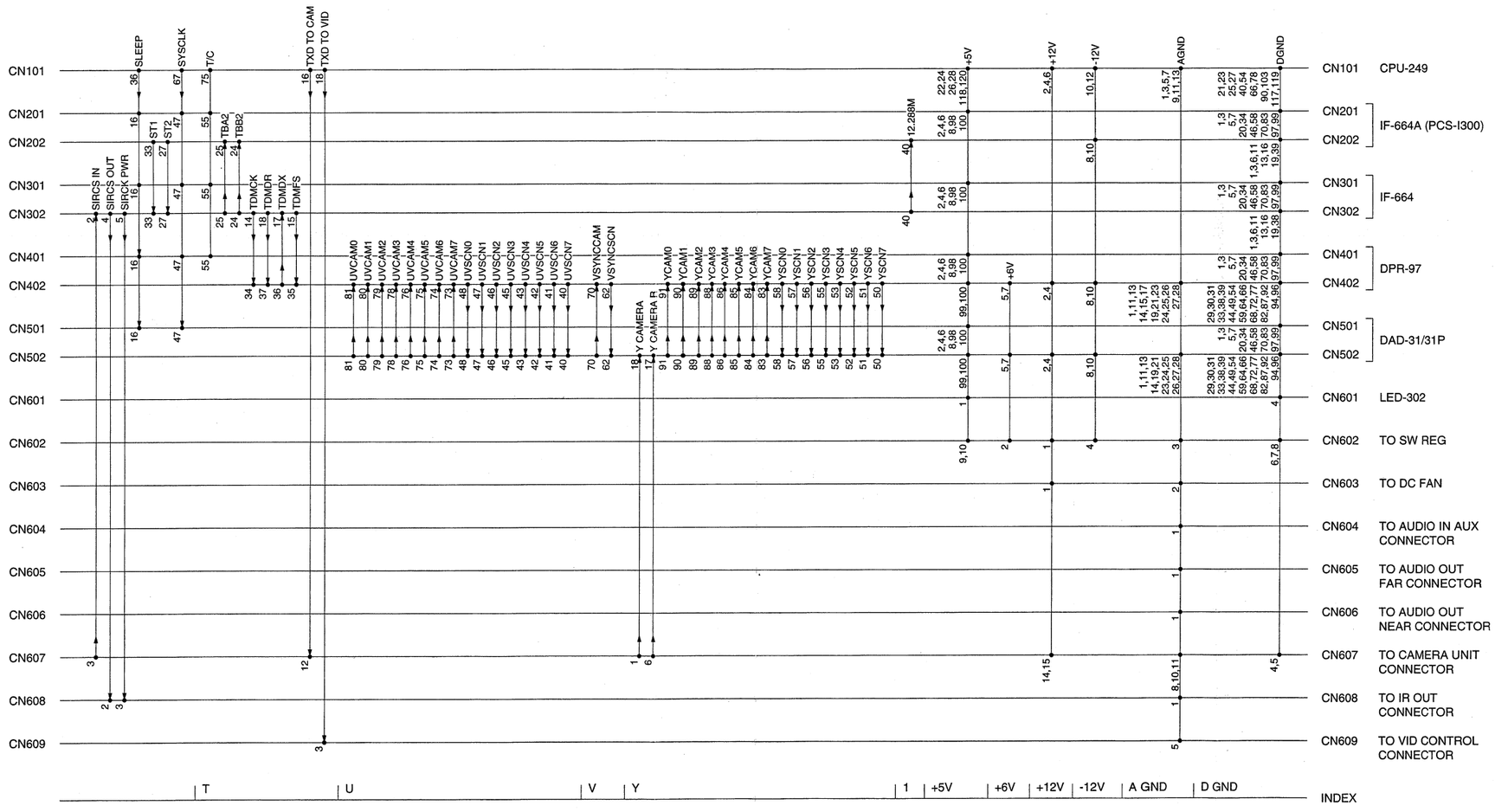
MB-748 (2/4)
PART NO 1-665-217-11
LED-302
PART NO 1-665-218-11
MODEL PCS-P300/P300P

CONNECTORS



MB-748 (3/4)
PART NO 1-665-217-11
MODEL PCS-P300/P300P

CONNECTORS



MB-748 (4/4)
PART NO 1-665-217-11
MODEL PCS-P300/P300P